

Program and Abstracts
Celebration of
Student Scholarship



**Showcase of Student Research,
Scholarship, Creative Work,
and Performance Arts**

April 26, 2017

Celebration of Student Scholarship

April 26, 2017

Program Overview	Camden-Carroll Library and Button Auditorium
7:45 – 8:30 am	All student scholars and faculty mentors are to register and pick up programs and name badges (2nd floor Camden-Carroll Library), Posters should be set-up at this time and PowerPoints loaded.
8:30 – 10:15 am	Oral Presentations at Camden-Carroll Library (2 nd Floor Commons, Classroom 201, Learning Resource Center 1 st Floor, 1 st Floor Commons, 4 th Floor Tower, 5 th Floor Tower and Seminar Room A, Room 306)
10:15 – 10:30 am	Break
10:30 – 11:45 am	Oral Presentations (Camden-Carroll Library)
11:45 – 12:00 pm	Break
12:00 – 1:15 pm	Oral Presentations (Camden-Carroll Library)
1:15 – 3:00 pm	Poster Presentations (Button Drill Room) (posters left up until 5:00 pm)
3:00 – 4:00 pm	Reception (Button Drill Room)
4:00 – 4:15 pm	Gallaher Memorial Music Performance (Button Auditorium)
4:15 – 5:00 pm	Awards (Button Auditorium)
5:00 pm	Removal of Posters

Special Recognition.....2

Posters at the Capitol Participants.....3

Welcome Statements.....4

Wayne Andrews, President
 Steven Ralston, Provost and Vice President for Academic Affairs
 Michael Henson, Associate Vice President for Research and Dean of the Graduate School
 Robert Albert, Dean, College of Business and Technology
 Chris Miller, Interim Dean, College of Education
 Dr. John Ernest, Interim Dean, Caudill College of Arts, Humanities and Social Sciences
 Wayne C. Miller, Dean, College of Science

Oral Presentation Abstracts.....6

Poster Presentation Abstracts.....31

Recipients of Undergraduate Research Fellowships 2016-17.....61

Student Index64

Table of Contents

Special Thank You to the Following:

Office of the President

Division of Academic Affairs/Office of the Provost

Document Services/Camden-Carroll Library

<i>Ray Bailey</i>	<i>Pam Hammonds</i>	<i>Doug Snedegar</i>
<i>Michael Bramel</i>	<i>Sean Johnson</i>	<i>Rodney Watkins</i>
<i>Jeff Bryant</i>	<i>Joe Schubert</i>	

Research and Sponsored Programs and the Graduate School

<i>Becki Alfrey</i>	<i>Michelle Emrick</i>	<i>Susan Maxey</i>
<i>Darlene Allen</i>	<i>Ollie Floyd</i>	<i>Karen Napier</i>
<i>Janet Cline</i>	<i>Gera Jones</i>	<i>Scott Niles</i>
<i>Brenda DeHart</i>	<i>Krys Lynam</i>	

Celebration of Student Scholarship Committee

<i>Dora Ahmadi</i>	<i>Julia Finch</i>	<i>M. Scott McBride</i>
<i>Jennifer Carter</i>	<i>Gina Gonzalez</i>	<i>Chris Miller</i>
<i>Steve Chen</i>	<i>Timothy Hare</i>	<i>Janet Ratliff</i>
<i>Louise Cooper</i>	<i>Michael Henson</i>	<i>Allen Risk</i>
<i>Laurie Couch</i>	<i>Philip Krummrich</i>	<i>Edna Schack</i>
<i>Mattie Decker</i>	<i>J. Marshall</i>	<i>Fujuan Tan</i>

Concurrent Session Moderators

<i>Robert Albert</i>	<i>Chris Miller</i>
<i>John Ernst</i>	<i>Wayne Miller</i>
<i>William Green</i>	<i>Lee Nabb</i>
<i>Latonya Hesterberg</i>	<i>Tom Pannuti</i>

Judges

<i>Dora Ahmadi</i>	<i>Christopher Field</i>	<i>Jim Masterson</i>	<i>Shahrokh Sani</i>
<i>Larry Albert</i>	<i>Julia Finch</i>	<i>Bruce Mattingly</i>	<i>Shana Savard-Hogge</i>
<i>Darlene Allen</i>	<i>Ashley Gibson</i>	<i>Susan Maxey</i>	<i>David Saxon</i>
<i>Max Ammons</i>	<i>Wretha Goodpaster</i>	<i>Michelle McClave</i>	<i>Alana Scott</i>
<i>Elizabeth Ash</i>	<i>Dirk Grupe</i>	<i>Janet McCoy</i>	<i>Mee-Ryoung Shon</i>
<i>Ray Bailey</i>	<i>Janelle Hare</i>	<i>Troy Meadows</i>	<i>Shane Shope</i>
<i>Bernadette Barton</i>	<i>Timothy Hare</i>	<i>April Miller</i>	<i>Delar Singh</i>
<i>Chris Beckham</i>	<i>Shannon Harr</i>	<i>Sarah Mollette</i>	<i>Ron Skidmore</i>
<i>Mark Blankenbuehler</i>	<i>Flint Harrelson</i>	<i>Lee Nabb</i>	<i>Joyce Stubbs</i>
<i>Amy Brown</i>	<i>Latonya Hesterberg</i>	<i>Johnathan Nelson</i>	<i>Sherry Stultz</i>
<i>Eric Brown</i>	<i>Jason Holcomb</i>	<i>Kim Nettleton</i>	<i>Fujuan Tan</i>
<i>Katy Carlson</i>	<i>Jami Hornbuckle</i>	<i>Scott Niles</i>	<i>Tim Thornberry</i>
<i>Doug Chatham</i>	<i>Teresa Howell</i>	<i>Tim O'Brien</i>	<i>Craig Tuerk</i>
<i>Kim Clevenger</i>	<i>Alison Hruby</i>	<i>Jen O'Keefe</i>	<i>Tom Williams</i>
<i>Timothy Conner</i>	<i>Lloyd Jaisingh</i>	<i>Helen Otterson</i>	<i>Ahmad Zargari</i>
<i>Christina Conroy</i>	<i>Jeannie Justice</i>	<i>Thomas Pannuti</i>	
<i>Louise Cooper</i>	<i>Michael Kessinger</i>	<i>Elizabeth Perkins</i>	
<i>Marcia Cooper</i>	<i>Shari Kidwell</i>	<i>Kimberly Peterson</i>	
<i>Gregory Corso</i>	<i>Philip Krummrich</i>	<i>Jeanne Petsch</i>	
<i>Laurie Couch</i>	<i>Lesia Lennex</i>	<i>Daniel Porter</i>	
<i>Thomas Creahan</i>	<i>Krys Lynam</i>	<i>Daryl Privott</i>	
<i>John Curry</i>	<i>Barbara Lyons</i>	<i>Janet Ratliff</i>	
<i>Nathan Dishman</i>	<i>J. Marshall</i>	<i>Jill Ratliff</i>	
<i>David Eisenhour</i>	<i>Russell Mast</i>	<i>Greg Russell</i>	

2017 Posters-at-the-Capitol Participants

Posters-at-the-Capitol, an annual event collaboratively hosted in Frankfort by all of Kentucky's public institutions of higher learning, enables members of the legislature and the Governor to better understand the importance of involving undergraduates in research, scholarship, and creative endeavor. The following Morehead State University students are recognized as official 2017 participants.

Jordan Bach - *Mentor Janet Ratliff/Steve Chen*
Cullen Lee Beard - *Mentor Michelle Lustenberg*
Matt Belcher - *Mentor Elizabeth Perkins*
Mark Will Castro, Jr. - *Mentor Michael Fultz*
Adda Coleman - *Mentor Christina Conroy*
Shelbie Crowe - *Mentor Kim Nettleton*
Kaitlyn Dennis - *Mentor Denise Watkins*
Michael Edlin - *Mentor Jorge Ortega-Moody*
Justin Elswick - *Mentor Lesia Lennex*
Sydney Gebka - *Mentor Johnathan Nelson*
Danielle Gibson - *Mentor Michael Fultz*
Joanna Guerrant - *Mentor Gina Blunt Gonzalez*
Allison Hull - *Mentor Gina Blunt Gonzalez*
Albina Laskovtsov - *Mentor Bernadette Barton*
Amber Lawson - *Mentor Bernadette Barton*
Mikinley Lustenberg - *Mentor Michelle Lustenberg*
Emily MacFarland - *Mentor Elizabeth Perkins*
Terra Riggs - *Mentor Wesley White/Ilun White*
Daniel Russ - *Mentor Thomas Pannuti*
Kevin Shankle - *Mentor Elizabeth Perkins*
Adam Stanley - *Mentor Sanghyun Lee*
Kaleb Toller - *Mentor Jorge Ortega-Moody*
Haley West - *Mentor Thomas Pannuti*

*For more information on the 2017 Posters-at-the-Capitol please go to:
<http://digitalcommons.murraystate.edu/postersatthecapitol/2017/Programs/>*

Morehead State University is deeply committed to a culture of undergraduate research since it provides a rich educational experience for our students and empowers our diverse population of scholars to reach their educational goals. Now in its twelfth year, our Annual Celebration of Student Scholarship is a time when we can all pause to reflect on the outstanding efforts of this community of scholars and to recognize the tremendous efforts of our students in research, scholarship and creative productions.



To ensure the optimal environment for learning, Morehead State University has a long tradition of combining great teaching with success in scholarship and creative productions. I firmly believe that the faculty who mentor students in research and other creative activities provide the stimulus that challenges imaginative minds often in new and innovative ways that would be impossible within the confines of the conventional classroom. In accomplishing this, our academic programs provide a wealth of opportunities for students to work alongside experienced faculty in meaningful research and creative initiatives that stretch our students' intellectual horizons.

The Annual Celebration provides a welcome opportunity for everyone to see the products of these unique intellectual partnerships -- products that are truly amazing in their originality, scope, and depth. As you review the Celebration of Student Scholarship program, you will discover a wide range of student accomplishments in individual and group research projects, creative efforts, and artistic performances across all academic disciplines.

Our collective vision is for Morehead State University to be universally recognized for teaching and scholarship of the highest quality. When considering the accomplishments on display at this year's Celebration, I am confident that through the continued efforts of all those involved, our University will indeed become a primary destination for students who wish to become both active partners in the process of discovery and exceptional citizens of our increasingly challenging world.

I encourage you to attend this showcase and provide your support and encouragement to our young scholars and artists, as well as to the members of our faculty and staff who have lent their talents to bring these projects to fruition. Thank you for your participation!

Wayne D. Andrews, President

I am pleased to be a part of the Celebration of Student Scholarship as we recognize the outstanding scholarly accomplishments of our students and their faculty mentors. Across the academy, the primary setting for teaching and learning centers around the curriculum and student engagement as related to structured classroom activities; however, it is the participation in research and creative production activities that provides an opportunity for students to transition from learner to scholar. Student engagement through inquiry that involves seeking answers to research questions or creative expression based on theories and principles provides the learner a different approach and perspective to learning.



Out of class experience provided by faculty mentors have opened doors to new learning opportunities for students as they discover the depth of their own abilities through the application and investigation of knowledge. Partnering with their faculty mentor(s), students are challenged to seek answers to questions through inquiry and apply their creative skills in a way that increases learning opportunities.

This Annual Celebration is an excellent illustration of the integration of scholarship, teaching, and learning. A special "Thank You!" to faculty mentors for their contributions to the intellectual and creative development of our students. "Congratulations" to all of our student scholars for their continued success.

Dr. Steven Ralston, Provost and Vice President for Academic Affairs



The Twelfth Annual Celebration of Student Scholarship spotlights Morehead State University as a premiere destination for all who desire a world-class education that is catalyzed by the personal mentorship of a world-class faculty. It is well accepted in academic circles that involvement in research and creative endeavor empowers students at both undergraduate and graduate levels to better analyze problems and synthesize solutions, thus helping them to better prepare for productive careers and leadership in their chosen fields, as well as to be well-informed, enthusiastic contributors to a progressive 21st century society. My congratulations and my thanks to our students and faculty for recognizing these facts and for their much-valued participation.

Dr. Michael Henson, Associate Vice President for Research and Dean of the Graduate School

The Celebration of Student Scholarship is the capstone event that recognizes the important contributions of faculty and student collaborative research to the overall education of our students at Morehead State University. Our faculty and students alike benefit tremendously from these one-on-one teaching and learning experiences.

Dr. Robert Albert, Dean, College of Business and Technology



The annual Celebration of Student Scholarship has provided a consistent high quality experience for students to share their research related to P-12 education and helps to prepare students for better understanding of data-driven decision making. The research P-12 education students are conducting helps to better respond to local, state, and national trends related to research-based and theory-grounded practice. The scholarship these candidates are presenting demonstrate the lessons learned in the classroom and beyond as part of the skills of professional educations. The College of Education faculty and staff congratulate the students participating in the celebration as their projects showcase the high quality of inquiry vital to teaching and learning within teacher education.

Dr. Christopher Miller, Interim Dean, College of Education

The Caudill College of Arts, Humanities, and Social Sciences is committed to a focus on research and creative production opportunities for students in each of our disciplines. Scholarly engagement and creative endeavors bring students and faculty mentors together as partners and provide advanced learning experiences for both. We are delighted to recognize these outstanding scholars who make significant contributions to the campus, state and region. Morehead State University's commitment to academic excellence and the advancement of Kentucky is evidenced by the exceptional work showcased at the Celebration of Student Scholarship.



Dr. John Ernst, Interim Dean, Caudill College of Arts, Humanities, and Social Sciences



The Celebration of Student Scholarship provides a wonderful opportunity to recognize and celebrate student scholarship and creative accomplishments. The relationship among faculty mentors and student scholars is enhanced when they work together to discover and disseminate new knowledge or express themselves through various forms of creativity. Student research and creative activity is an essential component of undergraduate education. Students working with faculty in scholarly activities not only experience the excitement of discovering new knowledge and solving challenging problems, but also learn important life skills that are necessary to thrive today's ever-changing world.

Dr. Wayne C. Miller, Dean, College of Science

Celebration of Student Scholarship

Camden-Carroll Library
Morehead State University

April 26, 2017

Concurrent Session – 2nd Floor Commons

Moderator: Dr. John Ernst

8:30 – 8:45 a.m. **Children and families of Appalachia: A multimedia expression**

CS = 01

**Anna Nichols, Dr. Joy Gritton, Mentor, Department of Art and Design, Caudill College of Arts, Humanities and Social Sciences*

This project is contributing to the Haldeman Community Center's mission by producing promotional and informational multimedia productions related to the community. This includes materials that can be used on the center's website and in social media venues to help create awareness and enhance fund raising efforts (leading to additional revenue sources for this non-profit), documenting center activities (such as their After School Program), and recording and editing oral histories. This project was supported by an Undergraduate Research Fellowship.

8:45 – 9:00 a.m. **Art for everyday life at the Haldeman Community Center After School Program**

CS = 02

**Faith McNabb, Dr. Joy Gritton, Mentor, Department of Art and Design, Caudill College of Arts, Humanities and Social Sciences*

This project allowed children participating in the Haldeman Community Center After School program to explore the diverse ways that art and design are essential to everyday life. Working in a variety of media, many of which were inexpensive and readily available, the children experienced not only the rewarding aspects of creativity, but were also exposed to practical applications of design and career opportunities in the arts. Activities were also devised so as to foster collaboration between the diverse programming offered at the community center, including music, theatre, cooking, and gardening. This project was supported by an Undergraduate Research Fellowship.

9:00 – 9:15 a.m. **Participatory folk music as community builder at the Haldeman Community Center**

CS = 03

**Sarah Morgan, Dr. Joy Gritton, Mentor, Department of Art and Design, Caudill College of Arts, Humanities and Social Sciences*

This project took place over one semester at the Haldeman Community Center After School Program. The goal of the community-centered work was three-fold: to foster intergenerational connections and friendships; encourage and develop musical creativity in a stress-free environment; and encourage an attitude of regional pride and cultural identity through participatory folk music. Hands-on musical experience was encouraged in order to teach participating students that music doesn't have to be reserved for professional performers. Old ballads, folk songs, and spirituals were taught aurally, just as they have been passed down from generation to generation in the past. Since mountain dulcimers are a very child-friendly instruments (having only three strings and easy for small hands to play), this instrument was used to teach the basics of rhythm, chords, and harmony in a relaxed environment. The project was supported by an Undergraduate Research Fellowship.

*undergraduate student presenter

+graduate student presenter

9:15 – 9:30 a.m. Hands-on with food: Gardening for children at the Haldeman Community Center After School Program

CS = 04

****Stephanie Bauman, Dr. Joy Gritton, Mentor, Department of Art and Design, Caudill College of Arts, Humanities and Social Sciences***

Gardening is an enriching experience for children that allows them to reconnect with their food and see their hard work progress into a living plant that sustains life. This project managed raised garden beds at the Haldeman Community Center for children participating in the center's After School Program. Children were instructed in the life cycle of plants, organic pest and weed control, and uses for plants after harvest. The goal was to allow the children to have hands-on experience and constructive instruction in gardening, as well as to foster healthy life style choices.

9:30 – 9:45 a.m. Arts programming and promotion

CS = 05

****Kristin Busby, Jennifer Reis, Mentor, Department of Art and Design, Caudill College of Arts, Humanities and Social Sciences***

The Undergraduate Fellowship in Arts Programming and Promotion focuses on the logistical planning, management and marketing of arts programming and services. Working within the arts programming hosted by the Claypool-Young Art Gallery, UR Fellow Kristin Busby focused on establishing and implementing Kentucky's only Americans for the Arts-affiliated Emerging Leaders Network at MSU (the Emerging Arts Leaders of Eastern Kentucky). Other advocacy work included attendance at Kentucky Arts Council's annual "Art Day" and facilitating student arts advocacy work in MSU's Intro to Arts Admin course. She was involved with the coordination and management of art events during the 2016-2017 academic year, including assisting in art handling, receiving, and installation with six exhibitions and eight large-scale art events. Her work included hosting evening and weekend programming as well. This fellowship is designed to prepare a student to begin a career in arts administration or to pursue a degree in arts administration or museum studies. Supported by the CCAHSS and Department of A&D.

9:45 – 10:00 a.m. The art of exhibitions

CS = 06

****Michael Hutchinson, Jennifer Reis, Mentor, Department of Art and Design, Caudill College of Arts, Humanities and Social Sciences***

The Undergraduate Fellowship in The Art of Exhibitions focuses on the logistical planning, management and marketing of arts programming specific to large art and design exhibitions within an university context. Embedded within the arts programming hosted by the Claypool-Young Art Gallery, UR Michael Hutchinson focused on the coordination and management of art events during the Spring 2017 semester including the four large-scale student exhibitions, the annual sophomore, high school, senior and BFA exhibitions. Duties included artist relations, event management and hospitality, art handling, receiving, and exhibition design and installation. His work included hosting evening and weekend programming as well. This fellowship is designed to prepare a student to begin a career in arts administration or to pursue a degree in arts administration or museum studies. Supported by the CCAHSS and Department of A&D.

10:00 – 10:15 a.m. An international peer mentoring program at Morehead State University: The results of academic and social integration

CS = 07

****Hannah Day, *Joseph Brock Finley, Donell C. Murray, Mentor, Department of Communication, Media and Languages, Caudill College of Arts, Humanities and Social Sciences***

The purpose of this program is to assist international students in their transition to Morehead State University. The founder of International Peer Mentoring Program (IPMP) saw a need in the international student community for assistance in academic and social integration. Each international student who requested to be a part of this program, was matched with a peer mentor based on the results from the Jung personality test. While the focus of this program was to help international students, it has become so much more. Peer mentors and peer mentees participated in social outings, tutoring groups, and university events. This program resulted in international students gaining knowledge regarding academic support services and social groups around campus. What resulted were both peer mentors and peer mentees building relationships with other peer mentors and peer mentees. Both groups were also exposed to different cultures while teaching with the results being a huge learning environment. The results of the first year of IPMP are going to be used to revise for an even stronger academic and social integration for the peer mentee.

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. Secular education and the rise of Egyptian nationalism

CS = 08

****Max J. Prowant, Dr. Alana Scott, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences***

Since the time of Mohammed Ali Pasha, Egyptian society has been encouraged by its leaders to modernize, whether it has been in the form of militarization or rapid industrialization. Egyptian society under the quasi-protectorate of the British in the first half of the twentieth century is no exception. There was a conscious effort by the Hashemite monarchy to “Westernize.” Kings Faud and Farouk encouraged Western architecture, adopted Western dress, and sent their children to European universities. Their efforts extended into the education system. Educational reforms introduced mandatory study of Science, such as mathematics, chemistry, and physics and placed less emphasis on Islamic studies.

This project will argue that Egyptian nationalism was a combined result of the secular education promulgated at both public universities such as Cairo University, the Islamist reform movement driven by Mohammed Abduh, and the independence ideology of the nascent Muslim Brotherhood.

10:45 – 11:00 a.m. Educating a civilization: Religious education in twentieth century Saudi Arabia

CS = 09

****Tyler Syck, Dr. Alana Scott, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences***

The Kingdom of Saudi Arabia was founded in 1932 and it was established that the foundation of the government would be Islam. Sharia law is the foundation of the Saudi Arabian legal system, and all the kingdom’s citizens are required to live by it. Education was no less affected and religion quickly became the central tenet around which schooling was based. However, one must consider the ramifications of this curriculum for 21st century students.

11:00 – 11:15 a.m. The rise of illiberal democracy in the Middle East: A Zakarian analysis of failed attempts at democratization in Iraq and Egypt

CS - 10

***Max J. Prowant, Dr. Jonathan Pidluzny, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences**

Fareed Zakaria's 1997 essay, "The Rise of Illiberal Democracy," and his subsequent *The Future of Freedom*, argued that liberalism is not a necessary or automatic outgrowth of democratic reforms. With the West's history in mind, Zakaria contended that free and fair elections result in liberal governance—where individual rights are protected and citizens are equal before the law—where certain political conditions are previously established: the rule of law, established property rights, and freedoms of speech, assembly, and religion.

In spite of the high profile failures of several recent democratizing efforts in the Arab Middle East—the only region of the world that counts not a single liberal democracy—few scholars have attempted similar historical analyses focused on particular cases in the Middle East. This paper investigates the failure of democratizing efforts in Egypt (where reforms were instigated by widespread internal frustrations) and Iraq (where reforms were driven by external actors) by analyzing the countries' histories, and their failed efforts at reform, through a Zakarian lens. This paper contends that efforts at reform failed to produce stable and liberal states because political stability, free-market capitalism, and organized civil society were absent.

11:15 – 11:30 a.m. The dialectical chief executive: How the Jefferson-Hamilton debate shaped the modern presidency

CS - 11

***Tyler Syck, Dr. Jonathan Pidluzny, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences**

The rivalry between Alexander Hamilton and Thomas Jefferson helped shape the United States at the time the country was most malleable. The differences between their thought gave rise to the American party system and the national political order. One finds, at the core of their dialogue, a fundamental disagreement about the scope and priorities of the federal government. In the years following ratification of the U.S. Constitution, Jefferson advocated a much weaker federal government. He authored the Kentucky Resolution in 1798, which claimed the states maintained the power to nullify federal laws that, in their estimation, contravened the U.S. Constitution. He also opposed nationalizing economic measures, in part to protect the agrarian character of American society. Throughout Washington's administration, the two men disagreed on the scope of the president's power, particular in matters of war and diplomacy. This paper examines Hamilton and Jefferson's thought on the presidency and the scope and extent of executive authority. It will pay special attention to the areas on which they agreed, that the president must be a figure of considerable influence at the federal level, and where they disagreed, in particular on the president as a popular leader.

Concurrent Session – Library Classroom 201

Moderator: Dr. Latonya Hesterberg

8:30 – 8:45 a.m. **Research and study of fashion and costume history spanning from ancient Egypt to modern day**

CS - 12

***Katie Dennis, Denise Watkins, Mentor, School of Music, Theatre and Dance, Caudill College of Arts, Humanities and Social Sciences**

In this ongoing project, research has been conducted on thousands of slides containing images of artwork and artifacts of historical significance related to costume and fashion history. These images span from Egyptian hieroglyphics to the inaugural dresses of every first lady of the United States up to Nancy Reagan. The slides are in the process of being digitally recorded and catalogued for future use by students in the hopes of furthering academic comprehension and awareness of the influence of costume and fashion history through the ages and its interdisciplinary connections. Special thanks to the family of Gretel Geist Rutledge, Denise Watkins, my faculty mentor, as well as the School of Music, Theatre, and Dance, and the Caudill College of Arts, Humanities, and Social Sciences. Research for this project has been funded by the MSU Undergraduate Fellowship Program.

8:45 – 9:00 a.m. **How could the presence of theatre arts in a military community benefit the mental and emotional health of military families?**

CS - 13

***Morgan Bauer, Octavia Biggs-Fleck, Mentor, School of Music, Theatre and Dance, Caudill College of Arts, Humanities and Social Sciences**

In this study we will examine the benefits of various forms of theatre and creative arts involved in theatrical production in relation to its presence in military communities. Similar programs that have already been established throughout the country will be analyzed in order to develop a potential program that would specifically target the youth of military families.

9:00 – 9:15 a.m. **Keeping it real: Henrik Ibsen's realistic writing style that reflected his changing world**

CS - 14

***Rachel Fisher, Denise Watkins, Mentor, School of Music, Theatre and Dance, Caudill College of Arts, Humanities and Social Sciences**

Henrik Ibsen is considered one of the most influential playwrights of the 19th century due to his revolutionary, realistic writing style. While not the first to experiment with realism, Ibsen combined the writing style with a scathing social commentary to create "realistic problem dramas." These dramas were more naturalistic than previous plays and allowed the audience to view themselves and their problems from a new perspective. In a time when social attitudes were changing, Ibsen's works were simultaneously influencing and being influenced by shifting attitudes supporting feminism and individualism. This essay examines the connection between the themes present in Ibsen's works and the concurrent global events that also promoted such themes. Ibsen remains one of the most important playwrights to study as this connection between entertainment and social change influences many playwrights today.

9:15 – 9:30 a.m. **Perspectives on guided improvisation**

CS = 15

***Gloria Yehilevsky, Dr. Brian S. Mason, Mentor, School of Music, Theatre and Dance, Caudill College of Arts, Humanities and Social Sciences**

Improvising music and playing classical repertoire tend to be viewed as opposites. However, the two complement each other, and can lend significant insight into new compositional and performance techniques. Being a good performer is no longer enough to excel as a 21st century musician, many more talents are necessary to succeed. For classical musicians, implementing improvisation into regular practice will significantly enhance ability on any instrument, leading towards becoming a more prolific 21st century musician. The term guided improvisation refers to a form of improvisation within a composition which gives the performer source material and guidelines, but leaves the performer with an amount of freedom requiring him/her to make decisions in every performance, every time he/she plays the piece. Other ways to implement improvisational practice is through composition. A third practice, lying between guided improvisation and composition, is reworking an old work on a new instrument. Developing these skills through any means places a musician's mind in a different capacity than does playing something that is notated specifically, and helps connect gaps in performing and creativity which are not easily filled otherwise. This research is supported by the George M. Luckey Honors Program and an Undergraduate Research Fellowship.

9:30 – 9:45 a.m. **Encyclopedias: A beginning guide to oboe reed making**

CS = 16

***Timothy Blake Johnson, Dr. Thomas Pappas, Mentor, School of Music, Theatre and Dance, Caudill College of Arts, Humanities and Social Sciences**

This study examines the process, techniques, and materials needed to make high quality oboe reeds. Oboists use a double reed, a piece of cane which has been folded in half and then tied onto a metal tube. The specific requirements of oboe reeds vary from person to person and so it is necessary for serious oboists to learn how to make their own. The process is very difficult to master and can only be learned through practice. All major texts on oboe reed making were studied to determine what was missing from each so that the issues could be resolved in this guide. This guide provides the beginning reed maker with preparatory exercises designed to make the process easier to comprehend. Detailed photographs of the entire process, along with diagrams of oboe reeds are included to make the process understandable for the beginning student. Terminology relevant to the process has been explained in full as it pertains to each section of the text. This project was made possible through the support of the Undergraduate Research Fellowship.

9:45 – 10:00 a.m. **Tongue tied: A greater look into the South Indian konnakol language**

CS = 17

***Darren Proctor, Dr. Brian S. Mason, Mentor, School of Music, Theatre, and Dance, Caudill College of Arts, Humanities and Social Sciences**

The focus of this research project examines the South Indian Carnatic music language known as Konnakol, with the goal of showing the effect that Konnakol has in three specific areas: Classical Indian music, Contemporary Western music, and Modern Frame drumming. Research has been conducted through extensive study and practice of the Konnakol language, as well as the generation of connections between the three areas of the study. This research is supported by an Undergraduate Research Fellowship.

10:00 – 10:15 a.m. Microcosm of raunch culture: College parties at Morehead State University

CS - 18

****Albina Laskovtsov, Amber Lawson, Dr. Bernadette Barton, Mentor, Department of Sociology, Social Work and Criminology, Caudill College of Arts, Humanities and Social Sciences***

“Raunch” culture, sometimes called the “sexualization” of culture, describes a hyper-sexualized climate that oversexualizes women while encouraging women to sexualize other women and themselves. Raunch culture influences much of our social life. Drawing on observation at five parties, and interviews with 12 women about their experiences, this presentation explores manifestations of raunch culture at college parties. This research finds that some male party-goers display an aggressive entitlement to female bodies that we speculate is a consequence of sexist cultural norms. We argue that college parties are an exaggerated encapsulation of everyday life in which women experience incessant harassment and internalize the myths of rape culture. College parties foster a climate in which women are seen as physically accessible and sexually available. This research was funded with two MSU Undergraduate Research Fellowships.

10:15 – 10:30 a.m. *Break*

10:30 – 10:45 a.m. **Evaluating impact: Determining the best mechanism for serving our region’s legal needs**

CS - 19

****Katherine L. Griffiths, *Gregory A. Bryan, Dr. Kelly Collinsworth, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences***

For many residents in Eastern Kentucky, finances limit their ability to retain legal services for a variety of reasons. One way to assist those who find themselves in this situation are legal clinics that inform and assist people with various legal issues. These clinics may provide general advice about legal topics or specific help preparing legal forms for court filing. In the creation and execution of legal clinics, practitioners face the task of utilizing an already small amount of resources to provide the greatest amount of impact in helping the poor’s legal needs. Determining which delivery mechanism is best suited for the different areas of law, the needs of our region, and the ability of our students to help in a given legal area is always a difficult question. This presentation evaluates several clinical designs to assess the viability of a particular delivery model to provide service opportunities to our students and help to persons in our service region. The assessment may also assist other departments on campus considering offering clinical experiences for their students in determining the best delivery mechanism for their clinic. This research was funded with Regional Engagement Fellowships.

10:45 – 11:00 a.m. **Philosophy and political founding in Plato’s Laws**

CS - 20

****Henry T. Quillen, Dr. Gregory McBrayer, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences***

The question “What is law?” is never explicitly raised in Plato’s *Laws*. The *Minos*, a Platonic dialogue named after the most-discussed lawgiver in the *Laws*, begins with this very question. In the *Minos*, Socrates says that “Law, then, wishes to be the discovery of what is;” but cannot the same be said of philosophy? On the next line, Socrates’ interlocutor mistakes him for saying “law is the discovery of what is.” Philosophy certainly would not make this mistake. In the *Laws*, just after one of the interlocutors reveals that he is to become a lawgiver, the Athenian Stranger asks “what must one think the city is going to be?” The lawgiver—and the *Laws*—questions not being, but becoming. The *Laws* cannot ask “What is law?” because the questioning of what is depends on the being of law, which is the task of the interlocutors. This paper will follow the first three books—the prelude—of the *Laws* to argue that the nature of political founding as becoming is to blame for the absence of the question “What is law?” in Plato’s dialogue about lawgiving. This research was funded with an Undergraduate Research Fellowship.

11:00 – 11:15 a.m. **The importance of a civic education**

CS - 21

****Brooke Blair, Dr. Gregory McBrayer, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences***

Previously, I researched the philosophical influences behind Thomas Jefferson's political ideologies. In particular I examined the sources behind his thoughts on education. Jefferson was a proponent of a civil education. He believed it to be crucial for the survival of a democratic government. The modern educational system is examined to determine if it adequately promotes a civic education. Then, the consequences of an inadequate civic education is discussed. A solution to the inadequacy will be examined through Jefferson's perspective and a modern perspective. This research seeks to prove the importance of a civil education for politically literate citizens.

11:15 – 11:30 a.m. **Factors of Europeanization and Westernization in Turkey in the twentieth century**

CS - 22

****Jonathan Dean, Dr. Alana Scott, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences***

Turkey's geographical position has emphasized its dialectical tension, whether it be between the Roman or Byzantine Empire and the Ottoman Empire or the European Union and the modern Middle East. Since Turkey gained its independence as a republic after the fall of the Ottoman Empire in 1922, there has been a cultural division, with westernization being supported by government factions under Mustafa Kemal Atatürk in the 1930s and a reactionary Islamist nationalist movement. As the twentieth century progressed, the forces in support of and against westernization became unclear. This presentation will seek to identify the primary elements for westernization, whether it be the government or the Turkish people, and will use this identification to draw conclusions about the motives and goals of that group.

Concurrent Session – Learning Resource Center 1st Floor

Moderators: Dr. Thomas Pannuti and Lee Nabb

8:30 – 8:45 a.m. **Preliminary assessment of sediment textures and sources of gravel in Dry Creek, Morehead, Kentucky**

CS - 23

****Zachary Creech, Dr. Steven Reid, Mentor, Department of Earth and Space Science, College of Science***

Previous work indicates that bank erosion along streams in Rowan County, Kentucky is the dominant source for high suspended sediment loads. Little is known about the nature and source of bed load, however. The study presented here seeks to determine the composition, texture and origins of gravel-sized bed load in Dry Creek in Morehead, Kentucky. Gravel bar samples were collected using a “bottomless bucket,” then wet-sieved. Composition and roundness of particles in each size fraction also were observed. Preliminary results indicate that most gravel consists of siltstone fragments derived from the Cowbell Member of the Borden Formation. Similar gravel is preserved in alluvial and colluvial deposits exposed in stream bank cuts, which suggests a bank erosion source. However, much of the bedrock in channels also is composed of Cowbell Member siltstones, which suggests that weathering and erosion of stream bottom bedrock may contribute to the gravel load. In general, gravel from bar samples collected in lower stream reaches tend to be better rounded and sorted than those collected upstream. Overall, however, the gravel bar samples were angular and poorly sorted. Further work is required to determine the respective contributions of bank material and stream bottom bedrock to bed load.

8:45 – 9:00 a.m. **Spatially-resolved spectroscopic analysis of the Galactic supernova remnant G27.4+0.0 (Kes 73)**

CS - 24

****Cadence Payne, Dr. Thomas Pannuti, Mentor, Department of Earth and Space Science, College of Science***

When classifying the most massive explosions in the known universe, supernova explosions exceed all others. By studying various elemental abundances derived from fitting the spectra of supernova remnants, information may be inferred about the explosion’s progenitor, thus providing general information regarding stellar evolution. This study summarizes the spectral analysis of supernova remnant G27.4+0.0 (Kes 73) observed by the Chandra X-ray Observatory. The analysis was performed using the XSPEC software package through CIAO, with an effective exposure time of 29.3 kiloseconds. The data is segmented into 10 regions spanning the remnant’s entirety. Clarification of the reasoning as to why this particular remnant exerts some of its observed properties is discussed. Abundances of Neon, Magnesium, and Iron are observed predominantly throughout the remnant, while traces of other elements are also prevalent. The compilation of abundant elements indicates that this source likely results from the collapse of a very massive star, classifying the explosion as Type II. Spectral analysis reveals that this remnant contains abundances of both hard and soft emission, proving the source to be dominated by interstellar/circumstellar swept up shocked material. This research was supported by an Undergraduate Research Fellowship provided by MSU’s College of Science.

9:00 – 9:15 a.m. Depositional environment and distribution of organic matter in a radioactive black shale: Results from the SOSS project

CS - 25

****Morgan K. Black, *Clayton R. Gullett, Dr. Jen O'Keefe, Mentor, Department of Earth and Space Science, College of Science***

The Sunbury Shale represents the upper most unit in a series of Devonian-Mississippian black shales in Kentucky. They are trace element, rare-earth, and petroleum source rocks that also record an important Appalachian orogeny. Previous works suggest that they were deposited under entirely anoxic, or variably euxinic-anoxic conditions; this disconnect suggested additional study was necessary. A core of Sunbury Shale was obtained by the Kentucky Department of Transportation in summer 2015. Shortly after it was obtained, the natural radiation produced by the shale was measured and the core was halved. From this, 52 samples, taken on 10-cm spacings, were obtained for palynology and organic petrography. Organic Petrography results indicate that while terrestrial organic matter is present, it is not dominant throughout the section and marine algae and solid bitumen (residue from oil migration) predominate. Palynological data suggest variations in ocean oxygenation and water depth, reminiscent of the existing geochemical results. Taken together, organic petrographic, palynologic, geochemical, and radiological data indicate that the Sunbury Shale was deposited in a variably euxinic to anoxic basin with pulses of terrestrial organic matter reaching the basin primarily during euxinic episodes. This project was funded by a KY NSF EPSCoR RSP grant to O'Keefe and Black.

9:15 – 9:30 a.m. Analyzing OJ287 using SWIFT telescope data

CS - 26

****Cassidy Bailey, Dr. Dirk Grupe, Mentor, Department of Earth and Space Science, College of Science***

We have analyzed the X-ray and ultraviolet light curves from the BL Lac Object OJ287. OJ287 is a blazar located in the constellation of Cancer. It is thought to be a binary black hole system, potentially holding one of the biggest black holes we have measured. OJ 287 is thought to be a black hole binary system. It was predicted that by the end of 2016 the smaller black hole in the system would pass through the accretion disk of the larger black hole and cause a flare which would be visible in particular in X-rays. This is exactly what happened, as in October of 2016 SWIFT detected and observed a sudden increase in the X-ray and UVOT luminosities. All data analysis was done using HEASOFT 6-19, xrt-pipeline, xspec, ds9, xselect, xrtmkarf, and GRPPHA while all observations were done with SWIFT. In this talk the results from the light curve analysis will be presented.

9:30 – 9:45 a.m. Swift Observations of RX J0134.2-4258

CS - 27

****Sierra Hauck, Dr. Dirk Grupe, Mentor, Department of Earth and Space Science, College of Science***

In this report, the Narrow Line Seyfert 1 (NLS1) active galactic nuclei RX J0134.2-4258 is analyzed using the SWIFT satellite in the UVOT and XRT telescopes, with observations totaling 46.83 kilo seconds in XRT and 36.71 kilo seconds in UVOT between the years 2007 and 2015. Software used for analyzing data includes ds9, xrtpipeline, xspec, and xselect. This source was previously observed by the ROSAT satellite in the 1990s, where RX J0134-4258 had been one of the softest spectra observed in X-rays. However, when ROSAT observed RX J0134.2-4258 again two years later the spectrum had dramatically changed: It now appeared to be a rather hard X-ray source. One model that explained this behavior is that the black hole's high accretion rate may have destroyed its corona through radiation-driven outflows, and that the corona would recover over the following years leading up to the beginning of SWIFT's observation of the source. Data gathered seems to support this conclusion, as there is a drop in flux between the ROSAT and SWIFT observations which indicates a hardening of the spectrum as the corona reappeared.

9:45 – 10:00 a.m. Analysis of Green Bank Telescope observations of the rotating radio transient (RRAT) J1955+10 using PRESTO and GUPPI

CS = 28

****Sonny Ernst, Dr. Thomas Pannuti, Mentor, Department of Earth and Space Science, College of Science***

In June 2014, a RRAT (Rotating Radio Transient) labeled as J1955+10 was detected while analyzing archived observations made by the Green Bank Telescope (GBT) using the Green Bank Ultimate Pulsar Processing Instrument (GUPPI) as the data processing back-end. Members of the Pulsar Search Collaboratory (PSC) – a national organization of teachers, educators and high school students – have been analyzing these archival observations with the intent of identifying previously unknown pulsars, RRATs and Fast Radio Bursts (FRBs). Follow-up timing observations of J1955+10 have been conducted with the GBT and GUPPI: this timing data is being analyzed at the Stellar Necrology Linux Laboratory in the Space Science Center in collaboration with astronomers at the University of West Virginia and at Green Bank Observatory using the Pulsar Exploration and Search TOolkit (PRESTO), a standard Linux software package for analysis of GUPPI observations. This software package can identify periods of pulsations of the observed pulsars, quantify the effects of radio interference, estimate the dispersion measure toward the pulsar and generate a raw single pulse plot. Using PRESTO, we have measured a pulsation period of ~1049 ms and a dispersion measure of 80.9 pc per cubic centimeter.

10:00 – 10:15 a.m. An analysis of archival observations made of the nearby face-on spiral galaxy NGC 3184 with the Chandra X-ray Observatory

CS = 29

****Timothy R. Huffman, Dr. Thomas Pannuti, Mentor, Department of Earth and Space Science, College of Science***

We present an analysis of archival observations made of the nearby face-on spiral galaxy NGC 3184 with the Chandra X-ray Observatory. This galaxy hosts a diverse population of X-ray sources such as supernova remnants and X-ray binaries (these objects are associated with the end points of stellar evolution) as well as a robust rate of star formation (as evidenced by five historical supernovae in the galaxy: SN 1921B, SN 1921C, SN 1937F, SN 1999gi and SN 2010dn). Given its face-on orientation, its high Galactic latitude (approximately 56 degrees) and its proximity (approximately 10 Mpc distant), NGC 3184 is an excellent candidate for the study of the discrete X-ray source population of a spiral galaxy that is similar in many respects to the Milky Way Galaxy. Using tools in the CIAO software package, we have run standard source detection algorithms (such as the wavelet-based tool wavdetect), which have yielded 33 discrete sources. We are analyzing the properties of these sources such as their spectral characteristics and time-dependence to their X-ray emission (if any).

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. A comparison of absorbed doses for incorrectly collimated repeat abdominal radiographs

CS = 30

****Joshua Allen, Dr. Ignacio Birriel and Anthony Dotson, Mentors, Department of Mathematics and Physics, Department of Kinesiology, Health and Imaging Sciences, College of Science***

The rule of “as low as reasonably achievable” (ALARA) was put in place to ensure that radiation doses for radiographic exams are kept as low as possible. An x-ray technologist is trained to acquire the best radiographs while adhering to ALARA. If all the pertinent anatomy required for a radiograph isn’t present, a repeat must be made. During a repeat radiograph, the technologist must choose proper collimation so they only irradiate the missing anatomy. The aim of this study is to compare the absorbed doses between properly and improperly collimated radiographs of the abdomen. Entrance skin exposures were measured using Landauer nanoDot optically stimulated luminescent dosimeters. A phantom was used in place of a patient and a Philips DigitalDiagnost X-ray machine was used to perform the exam. Radiographs of the abdomen were obtained utilizing different collimation techniques and the entrance skin exposures for each were compared. The “anode heel effect”, which causes a difference in energy between the two ends of the x-ray beam, as well as the reduction of intensity of the beam proportional to the inverse of the distance squared were also examined, the results of which will be used to determine other dose reduction techniques.

10:45 – 11:00 a.m. Which baseball team will have the best chance to win the World Series?

CS - 31

****Dillon H. Applegate, Dr. Chris Schroeder, Mentor, Department of Mathematics and Physics, College of Science***

It is really hard to be able to predict who might actually be the overall best team in baseball throughout the regular season and postseason. There are many factors that are looked at when the experts predict who will win the World Series. We will look at a ranking system for the Major League baseball teams from the 2016 season. Wins are always the biggest factor to determine if which team is the best, but it is usually easier for a team to win at home as opposed to on the road. As a result, away wins will be weighted heavier as opposed to home wins. Strength of schedule will also lead to a difference in the amount of wins, so this will be factored in as well. Lastly, winning the division is important to making the playoffs, so the last factor we will consider is each team's divisional record. These three factors will hopefully help determine which team has the best chance to win the World Series.

11:00 – 11:15 a.m. Analysis of globe at night data: 2006-2015

CS - 32

****Kevin Brashear, Dr. Jennifer Birriel, Mentor, Department of Mathematics and Physics, College of Science***

The Globe at Night (GaN) project has been going on for over 10 years now. Through these ten years with the aid of contribution from citizen scientists, Globe at Night has acquired hundreds of thousands of individual data submissions of night sky brightness in the form of naked eye limiting magnitudes (NELM) and Unihedron Sky Quality Meter (SQM) readings. Beginning with the year 2006 and ending with 2015, the global means of NELM has remained fairly constant with the slight appearance of an upward trend in sky pollution. Using statistical analysis of descriptive statistics derived from the data provided for these years, our goal was to test whether the seemingly downward trend is statistically significant and to what degree of an increasing in sky pollution we might be facing. This research was funded through the George M. Luckey Jr., Academic Honors Program.

11:15 – 11:30 a.m. Fourier analysis applied to driving behavior

CS - 33

****Zoe M. Becerra, Drs. Michael Dobranski and Gregory Corso, Mentors, MATH499D, Dr. Doug Chatham, Instructor, Department of Mathematics and Physics, Department of Psychology, College of Science***

Human driving data in the shape of complex sinusoidal waveforms, collected from a previous study, were analyzed using Fourier analysis. Using this type of analysis an attempt to identify frequency similarities or differences in vehicle speed, lane deviation and vehicle heading between people over the duration of the drive could be determined. In the previous study, two groups of people provided driving data collected from a driving simulator. The two groups of participants were classified as ADHD or Non-ADHD. The initial approach for this analysis was to assess, using a fast Fourier transform, whether there were any commonalities among the sinusoidal functions generated from the driving data for those participants classified as Non-ADHD and for those participants classified as ADHD. The data suggest there are differences in driving behavior between people with and without ADHD. The ADHD classified participants showed erratic behavior with an inability to control the vehicle: they could not maintain a constant speed or stay in the center of the lane. Additional data analyses are ongoing.

11:30 – 11:45 a.m. **Investigating the relationship between KPREP math scores in 7th and 8th grade and math ACT scores in 11th grade**

CS - 34

****Lillian Shear, Dr. Robert Boram, Mentor, Department of Mathematics and Physics, College of Science***

This research project explores the longitudinal relationship between the mathematics KPREP test scores for students in 7th and 8th grade with the mathematics ACT scores for those same students in 11th grade. The data provided for this study was free from any indicators of gender, race or socioeconomic status and each student was given a unique number to be used as a reference throughout the analysis. The data was tracked and each student's progress from the KPREP test score was compared to the scores they received on the ACT test. The analyzed data will be able to determine if there is a relationship between the Math KPREP scores and the mathematics score on the ACT and how the KPREP scores can be used to detect students who are predicted to score below benchmarks on the ACT. This research project aims to create a system of identifying students who are predicted to be at or near the benchmark ACT in Math.

11:45 – 12:00 p.m. **Break**

12:00 – 12:15 p.m. **The Final Three: A mathematical card trick**

CS - 35

****Dane Cravens, Dr. Robin Blankenship, Mentor, Department of Mathematics and Physics, College of Science***

Using the Ruby programming language, we take a look at the mathematics behind a specific card trick called "The Final Three". We first consider how the trick works, breaking it down into its core components. We then study the significance of these components, and explore how the trick changes when these components are modified.

12:15 – 12:30 p.m. **The bridge to major in you: An analysis of student success in developmental mathematics**

CS - 36

****Hunter R. Chandler, Dr. Timothy O'Brien, Mentor, Department of Mathematics and Physics, College of Science***

Developmental mathematics has consistently been a barrier to undergraduate student achievement. As expectations of collegiate preparedness change, higher education must act on institution-specific barriers to suit the needs of students. The purpose of this study is to discover Morehead State University's (MSU) developmental mathematics successes and obstacles vis-à-vis general education math course persistence, effectiveness of modularization, and predictors of student success in developmental math courses. Data was collected from MSU's Office of Institutional Research and Analysis, College of Science, and Office of Academic Advising and Retention. When comparing developmental math cohort's proportional models to the observed counts of general education math courses, MSU does well to prepare developmental math students for general education math. The modularization of developmental math was briefly inconsistent, but the Fall 2016 cohort performed better than previous cohorts with and without modularization. A final model predicts the probability of course success using significant predictors. These findings suggest a well-performing developmental math program, but there are more measures that can be taken to continue to increase student success in developmental mathematics.

12:30 – 12:45 p.m. **Programming knotty polynomials**

CS - 37

****Iris Johnson, Dr. Robin Blankenship, Mentor, Department of Mathematics and Physics, College of Science***

It has been shown that using the G2 Bracket of Skein relations on a knot can produce a polynomial that is an invariant of a knot. This project focuses on the process of creating the polynomial and converting the process into an algorithm that is implemented in Python.

12:45 – 1:00 p.m.

Mathematical crochet: A connection between acrylics and equations

CS ▪ 38

****Shelby Price, Dr. Timothy O'Brien, Mentor, MATH 499D Capstone Project. Dr. Doug Chatham, Instructor, Department of Mathematics and Physics, College of Science***

Crochet is a fiber art that has been around for hundreds of years. Although the main purpose behind crochet has traditionally been to create necessities such as clothes and to provide financial support; recently, crochet has been used as a medium through which to make mathematical models. Hyperbolic planes, which are notoriously difficult to create with paper, are very simple to create with crochet. Crocheted hyperbolic planes are more durable, which allows them to be used in classrooms as teaching aids. Crochet has also been used to model two-dimensional stable solutions to differential systems of equations, as well as to call attention to the world's struggling reef systems with a crocheted coral reef system. This presentation will continue the connection between mathematical theory and crochet techniques by presenting mathematical models of different types of crocheted surfaces.

1:00 - 1:15 p.m.

Optimization and the bus routing problem

CS ▪ 39

****Zackary B. White, Dr. Timothy O'Brien, Mentor, Department of Mathematics and Physics, College of Science***

The purpose of this presentation is to demonstrate the optimal path that a given number of buses should take from a given destination to pick up all children that attend Tilden Hogge Elementary School while minimizing the overall distance that the buses travel. Determining the path that each bus should take to minimize this distance traveled will be explained using a clustering algorithm outlined in the presentation. There will also be several graphs constructed from Python to represent maps obtained from a graphical database. Data for student location as well as the buses starting point has been provided by Tilden Hogge Elementary School.

Concurrent Session –1st Floor Commons

Moderator: Dr. Wayne Miller

8:30 – 8:45 a.m. **The Elsa effect: Conflict strategies of low, moderate, and high self-concealers**

CS = 40

**Katelyn S. Hanes, Sarah Young, Dr. Laurie L. Couch, Mentor, Department of Psychology, College of Science*

This study sought to explore links between self-concealment and strategies for dealing with romantic conflict. Specifically, because past research has suggested self-concealment may be linked to control, it was hypothesized that high levels of concealment would be related to control-based strategies when dealing with romantic conflict as well. To test the hypothesis, self-concealment and conflict strategies were measured via an online survey in 102 college students who were in romantic relationships. Then, using a multivariate analysis of variance technique, low, moderates, and high concealers were compared on their usage of six strategies for dealing with romantic conflict (e.g., compromise, avoidance, interactional reactivity, separation, domination, and submission). Results revealed that levels of self-concealment were reliably associated with how partners react during relational conflict.

Specifically, moderate effects were observed suggesting high self-concealers reported reacting with greater use of domination, separation, and interactional-reactivity (all of which are control-based strategies) than low or moderate self-concealers. However, no differences were observed between high, moderate, and low self-concealers for the conflict strategies of compromise, avoidance, or submission, none of which are control-based strategies. Results generally supported the hypothesis and will be discussed in terms of their potential implications for management of relational conflict.

8:45 – 9:00 a.m. **Low self-esteem, depression, and body dissatisfaction: A model of anorexic symptom development**

CS = 41

**Nick Dawson, Dr. Timothy Thornberry, Mentor, Department of Psychology, College of Science*

In a recent study (Dawson & Thornberry, 2017), we found support for a portion of the model of eating pathology development proposed by Tissot and Crowther (2008). In it, socially prescribed perfectionism and self-oriented perfectionism were predictors of bulimic symptomatology, and body dissatisfaction mediated this relationship. In our analyses, we yielded similar results when measuring anorexic symptoms. Tissot and Crowther (2008) originally hypothesized that self-esteem would belong in their model; however, their hypothesis was not supported. We believe this may be due to the fact that they never tested self-esteem as a moderator of body dissatisfaction and eating pathology. Additionally, there is research indicating comorbidity between eating disorders and depression. Thus, we believe that depressive symptoms may become more prominent after being dissatisfied with one's body. In the current study, we hypothesized that in our sample self-esteem would be a moderator between body dissatisfaction and anorexic symptoms. We also hypothesized that depression would be a moderator between the same variables. We followed the Hayes and Preacher (2014) statistical method for determining moderation to test our hypotheses. Implications for identifying and treating anorexic symptoms in college samples will be discussed.

9:00 – 9:15 a.m. **A comparison of acute withdrawal from amphetamine, morphine, and nicotine in rats**

CS - 42

****Samuel L. Case, Terra E. Riggs, Brianna K. Ward, Drs. Ilsun White and Wesley White, Mentors, Department of Psychology, College of Science***

The talk will compare features of acute withdrawal produced by amphetamine, morphine, and nicotine. In ongoing work with nicotine, different groups of rats received a series of 5-day tests. At light onset of test day 1, animals received a control treatment, and at light onset of test day 3, they received an experimental treatment. Experimental treatments included different doses of nicotine followed 30 minutes later by saline or a dopamine D1 receptor antagonist. Following treatments, animals were placed in individual open fields, and activity was monitored for the next 24 hours. Similar studies were previously done with amphetamine and morphine. Amphetamine, morphine, and nicotine acute withdrawal will be compared in terms of time course and intensity, capacity to be blocked by D1 antagonist, and proportion of withdrawal-resistant animals. The comparison suggests that, though the drugs are from different classes, the mechanisms by which they produce acute withdrawal partially overlap. Supported by NIH grant DA015351 and UG fellowships.

9:15 – 9:30 a.m. **Supporting student success: Identifying variables linked to academic difficulties**

CS - 43

****Taylor F. Zumwalt, Dr. Timothy Thornberry, Mentor, Department of Psychology, College of Science***

The retention of students is a priority of every university. To improve retention, it is imperative institutions identify factors relating to positive academic performance. This understanding could help universities create an environment more conducive to student success. Previous studies indicate that factors such as financial support, self-confidence, and social support have been positively correlated with academic retention (Lotkowski, Robbins & Noeth, 2004). Unfortunately, there is a dearth of current research exploring risk factors associated with negative academic outcomes. This study sought to explore the demographic and mental health differences, if any, between students within the academic probation program and students within the general population of students. Individuals completed an online survey that included questions assessing demographic information, various aspects of mental health, and behavioral tendencies. Individuals were recruited from psychology courses and through the Office of Academic Advising and Retention. It was hypothesized that demographic variables such as low socioeconomic status, as well as mental health factors, such as low perceived social support, would be correlated with probationary academic status. This research was supported by MSU Undergraduate Research Fellowship and the Appalachian Health and Research Center Research Seed Grant.

9:30 – 9:45 a.m. **Divided attention and the dual-task paradigm**

CS - 44

****Adam R. Bocook¹, Hannah M. Smith¹, Dr. Gregory M. Corso¹ and Dr. Nicholas Kelling², Mentors, ¹Department of Psychology, College of Science, Morehead State University, ²Department of Psychology, College of Human Science and Humanities, University of Houston – Clear Lake***

The dual-task paradigm takes place when one is asked to execute two tasks (primary and secondary) simultaneously, and the performance of these tasks affect either one or both tasks. In regards to how secondary tasks interfere with the performance on a primary task, Wickens (2002) proposed a four-dimensional multiple resource model that predicts greater degrees of interference if tasks share stages of information processing, sensory modalities, codes, and perceptual channels (Wickens, 2002). Taking from Wickens' model, we designed a reactionary task (Whack-A-Mole) and a tracking task (Worm) which incorporate the visual modality and spatial coding needed to make responses. In addition to the dual-task, participants were also asked to complete two attention deficit hyperactive disorder (ADHD) diagnostic assessments. These assessments include the Test of Variables of Attention (TOVA) and the Continuous Performance Test (CPT). We hypothesized that performance on the ADHD diagnostic assessments will correlate with performance on the dual-task. Preliminary analyses revealed a statistically significant correlation between performance on the TOVA and performance on the dual task, $r(8) = .80, p = .016$.

9:45 – 10:00 a.m. Targeting body image dissatisfaction with cognitive defusion and restructuring micro-interventions

CS - 45

***Rebecca Ashley, Dr. John T. Blackledge, Mentor, Department of Psychology, College of Science**

The effects of two common types of therapeutic techniques on reducing the psychological distress elicited from a negatively self-evaluative body image statement generated by subjects were investigated. Subjects were asked to generate and write down a negative self-evaluative thought related to their body image that they found distressing, and to rate the degree of distress the thought elicited and how believable the thought was. In the first experimental condition, subjects were given a rationale designed to help them question the veracity and applicability of negatively evaluative thoughts. They were then asked to engage in a commonly used cognitive defusion micro-intervention that involves violating standard language conventions. Subjects were asked to type the distressing thought into a word scrambling tool and scramble the letters in an effort to demonstrate the arbitrary nature of words. In the control condition, subjects were given a rationale that normalizes having negatively self-evaluative thoughts and describes some of the ways in which we often make inaccurate evaluations. Subjects were then asked to think logically and to look for evidence against their distressing thought. Preliminary data from 22 subjects tentatively suggest similar effects in each condition. This research was supported by an Undergraduate Research Fellowship.

10:00 – 10:15 a.m. The relationship between parent education and parent behavior

CS - 46

***Kaitlyn Wilson, Tesla Henderson, Dr. Timothy Thornberry, Mentor, Department of Psychology, College of Science**

Studies assessing parent education find that higher parent education relates to positive effects on the parents and children. However, it is unclear if specific parenting behaviors are responsible for these positive outcomes in families with higher levels of education. This study hypothesized that parent education directly influences the interaction between the parent and child via the parent's behavior. We evaluated the relationships between parent education levels and different observable interactions between parent and child using the Dyadic Parent-Child Interaction Coding System (DPICS). Specifically, we expected to find that higher educated parents would engage in more talk with their child, would ask their child more questions, and would praise their child more than parents with a lower educational level. To test these hypotheses, we conducted two-tailed Pearson correlations and a series of ANOVAs to compare mean observed behaviors between educational groups. Implications for clinical work with families of varying educational backgrounds in Appalachian Kentucky will be discussed. This research was funded by the Undergraduate Research Fellowship at Morehead State University via the Appalachian Health and Research Center Research Seed Grant.

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. Lack of efficacy of a common dewormer in Greyhound dogs

CS - 47

***Katie Shuba, Dr. Kimberly Peterson, Mentor, Department of Agricultural Sciences, College of Science**

It has been reported that pyrantel pamoate is the most effective and commonly used anthelmintic (dewormer) against canine intestinal parasites of the *Ancylostoma* species. Recent studies have reported *Ancylostoma* sp. resistance to pyrantel pamoate. The project design is to determine if Greyhound dogs in the Morehead Youth Development Center Greyhound Program are responding to routine anthelmintic treatments. After review of 70 Greyhound medical records, 35% of dogs were infected with an *Ancylostoma* species. After treatment with pyrantel pamoate, infection persisted. In the literature, S.R Kopp et al./Veterinary Parasitology, demonstrates that fecal egg counts rose in both treated and untreated dogs when pyrantel pamoate is used. Furthermore, it has been shown that third stage *Ancylostoma* larvae can become arrested in the muscle and tissue of the animal. Companion Animal Parasite Council states that these larvae cannot be treated with the routine anthelmintics like pyrantel pamoate. In order to verify efficacy of anthelmintic treatment, Richard Gerhold, DVM recommends that a fecal egg count is performed 7-10 days after each treatment to determine drug efficacy. The two Greyhounds currently in the program were infected with *Ancylostoma* upon entry to the program and appear to be cleared from infection with an alternate anthelmintic, ivermectin. This project is supported by the Center for Regional Engagement Undergraduate Fellowship.

10:45 – 11:00 a.m. A preliminary macrolichen species inventory of the Eagle Lake watershed, Rowan County, Kentucky

CS = 48

***Kendall B. McDonald, Dr. Allen C. Risk, Mentor, Department of Biology and Chemistry, College of Science**

In Kentucky, lichens are understudied, with only a few inventories conducted including those in Mammoth Cave, Land between the Lakes, and various counties in northern and eastern regions of the state. This study focused on the Eagle Lake watershed located in Rowan County, Kentucky. Specimens were collected within an elevation range of 800-1240 feet, in various forest and community types, and on bark, rock and soil substrates. The 149 collected and identified specimens comprised 58 species, 23 genera and included several rare species (for Kentucky). Eight North American biogeographical distribution patterns were represented: 54% east-temperate, 19% were Appalachian-Great Lakes, 12% pan-temperate, 5% east-temperate/Pacific Northwest, 4% Appalachian-Great Lakes/Pacific Northwest, 2% Coastal Plain, 2% east-temperate/boreal, and 2% southeast. This research was supported by an Undergraduate Research Fellowship at Morehead State University.

11:00 - 11:15 a.m. Hyperglycemia induced angiogenesis

CS = 49

***Stephen Nash, Dr. Darrin DeMoss, Mentor, Department of Biology and Chemistry, College of Science**

Angiogenesis, the intricate process of vessel expansion from preexisting vasculature, is necessary for maintaining a functional network of vessels as metabolic conditions fluctuate. The generation of new vessels is a complex and highly regulated series of events influenced by a variety of proangiogenic and antiangiogenic factors. Under normal physiological conditions, angiogenesis is divided into three periods - initiation, elongation, and formation. Though associated with a healthy vascular network, angiogenesis can have negative consequences. In proliferative diabetic retinopathy, regulation of angiogenesis is disrupted, which results in severe damage to the retina and ultimately blindness. Understanding the mechanisms involved in vasculature development under hyperglycemic conditions is of considerable clinical significance. The stimulus for angiogenesis in the diabetic retina appears to be hypoxia. The levels of various proangiogenic and antiangiogenic factors are likely altered under hypoxic environmental conditions giving rise to angiogenesis.

11:15 – 11:30 a.m. Mobius in the classroom

CS = 50

***Brittany Rose, Dr. Randy Ross, Mentor, Department of Mathematics and Physics, College of Science**

The Mobius strip, a deceptively complex geometric structure, has been admired by scientists and mathematicians for over 150 years for its unique properties. Construction of the Mobius Strip is an elementary task that can be used to teach students of all ages about 2-dimensional and 3-dimensional figure properties (especially circles and cylinders), general and geometric topology, investigative mathematics, homeomorphism, etc. The Mobius Strip can also be used in the classroom as a literary metaphor for deceptive complexity and the idea of "impossibility". This paper will explore the structure's application in the classroom, both literally and metaphorically.

11:30 – 11:45 a.m. **Softball from a statistical standpoint**

CS - 51

****Kayla McGuffey, Dr. Chris Schroeder, Mentor, Department of Mathematics and Physics, College of Science***

The sport of softball has always been overlooked when it comes to statistics since baseball is America's favorite pastime. This presentation looks directly into softball statistics and looks at some of the best softball players in the Ohio Valley Conference based on last year's statistics. This data is examined through a program that was modified specifically for the softball teams in the Ohio Valley Conference and their hitting statistics. This program randomly simulates an inning based off the statistics from each of the team's top hitters in 2016. We will look at the comparison of runs scored for the team's line up versus the top hitter's at bats as well as compare the individual player performances being modeled. This research was supported by the Ohio Valley Conference Sports Website along with the guidance of Dr. Schroeder.

11:45 – 12:00 p.m. **Using algorithms to create solutions to the school bus routing problem**

CS - 52

****Zachary D. Edmonds, Dr. Timothy O'Brien, Mentor, Department of Mathematics and Physics, College of Science***

The School Bus Routing Problem (SBRP) pertains to the issue of building and implementing routes on which school buses transport students from their homes to school, using available resources. The SPRP is a particular type of the extensively researched Vehicle Routing Problem (VRP). Similar to the VRP, existing SPRBs have extremely diverse constrains such as the longest time or distance of a possible route, heterogeneous vs. homogeneous bus fleets and single vs. multiple schools. By nature, these routing problems are NP-Hard problems in which possible solutions and thus time required to ensure the optimal solution increase exponentially with the size of the problem. Therefore, this research is meant to find a solution that is significantly more efficient than a non-computer-assisted solution, but not necessarily the best possible solution. This research considers a problem consisting of creating routes to service students of one elementary school in Rowan County, Kentucky. The methods in this study involve utilizing several algorithms to create a feasible solution to this SBRP.

12:00 – 12:15 p.m. **Expansion of the prime cube mathematical game**

CS - 67

****Katie Bamberger, Dr. Vivian Cyrus, Mentor, Department of Mathematics and Physics, College of Science***

The purpose of this paper is to expand on the Prime Cube Mathematical Game and to explore the association with n-sided polygonal pyramids. This paper will delve into prime numbers and their association with each other. We will explore prime complements and their relevance to the Prime Cube game. Prime complement sets will be defined and related to the minimum and maximum number of legal moves of a game.

Concurrent Session – 4th Floor Tower

Moderator: Dr. Robert Albert

8:30 – 8:45 a.m. **An inductive study of perceived susceptibility to unethical behavior**

CS - 53

****Sydney Gebka, Dr. Johnathan K. Nelson, Mentor, School of Business Administration, College of Business and Technology***

Ethics scandals and research provide evidence that everyone is capable of making unethical decisions. Despite this though, many people tend to think of themselves as highly ethical. However, there is often a gap between how ethical people are compared to how ethical they perceive themselves to be. While research has focused on reasons why we fail to live up to our highest ethical ideals, we believe it is important to examine those situations where we are aware this gap and our capacity to engage in unethical behavior. We referred to this awareness as perceived susceptibility to unethical behavior and conducted an inductive research study to develop a model of behaviors and outcomes associated with it. We examined the perceptions people have of themselves and the actions they take as a result of experiencing perceived susceptibility to unethical behavior. We discuss the implications of perceived susceptibility to unethical behavior for creating a greater openness for individuals to discuss ethical temptations, and to be more open to interventions for promoting ethical behavior. This research was supported by the MSU UG Fellowship program and a MSU Research and Creative Productions Grant.

8:45 – 9:00 a.m. **An automated machine vision based sorting system for inspection of industrial fasteners**

CS - 54

****Cody Garcia, Dr. Nilesh Joshi, Mentor, School of Engineering and Information Systems, College of Business and Technology***

In automotive fastener industry, thousands of parts are shipped on a daily basis to fill customer orders. The sorting process before shipping is an important task to avoid accidental mixing of different parts from different orders. Majority of high volume parts are screened through large-scale, expensive sorting machines. On the other hand, some low volume parts are still hand sorted in the industry. It is cost and time prohibitive to send low volume parts through large machines that are tooled and programed to constantly run high volume orders. Thus, many companies use hand sorting techniques instead for low volume parts, which is very inefficient. Humans frequently make errors on monotonous tasks such as sorting tiny parts that are similar to one another. This becomes a quality control issue. The goal of this research is to design, build, and test a small and inexpensive sorting machine prototype that can replace many current hand sorting processes used on low volume products. This project is supported by MSU Undergraduate Research Fellowship.

9:00 – 9:15a.m. **Design engineering - Delta robot applications for training**

CS - 55

****Michael Tyler Edlin, +Adolfo Enrique Samudio Cano, Kaleb Toller, Dr. Jorge Alberto Ortega-Moody, Mentor, School of Engineering and Information Systems, College of Business and Technology***

WHAT WAS DONE AND WHY? WHAT WAS FOUND? WHAT DOES IT MEAN? The Delta Robot Technical Training for industrial robots has been a concern in automation attributable to production cost, software, and fee for training. For a school to purchase an industrial robot, one must have setup space for work stations and be capable of affording each unit. Work space for stations and affordability has been a leading cause in why students lack hands on experience with robots in an industrial environment. Our team is providing research with design and manufacturing an affordable robot using SolidWorks 3D CAD design software, 3D printers, and the HAAS CNC Machine. Fully Designed in 3D software a transfer of the Delta Robot can be altered from reality into virtual reality. Virtual and Augmented Reality has offered opportunities to provide hands on experience to students from industrial equipment without the possibility of ever touching the unity. We have found by producing a virtual environment to simulate real world applications is a safe way of training students for operation control, maintenance, and programming. Thus, training for automation transforms from an exclusive limited source to an opportunity in the number of certifications increasing through virtual reality.

9:15 – 9:30 a.m.

Virtual scenario for sampling of phytoplankton in lakes

CS - 56

+Damaris Garcia-Gracia, Dr. Jorge Alberto Ortega-Moody, Mentor, School of Engineering and Information Systems, College of Business and Technology

The phytoplankton is in decline on the planet, annually it gets reduced by 1% because of climate change. This microorganism influences the abundance and biodiversity of marine organisms, motive for which its analysis is important. Consists of obtaining a volume of water, generally a liter, the depth of which the sample is normally taken depends on the method. Nevertheless, the most common limitations in higher education institutions of environmental Science are related to the lack of time and resources necessary for each student to travel to training locations and perform sampling of phytoplankton in lakes. This factors have an adverse effect in the formation of students. The design of a virtual scenario allows the student to obtain knowledge on the procedure without having to physically travel to the location. Economic resources are saved for students as well as institutions; this will have as a result the capacity to obtain the capabilities to achieve objectives in the field work.

9:30 – 9:45 a.m.

Virtual commissioning for industrial automation

CS - 57

***+Saihiranmitra Mudiki, Dr. Jorge Alberto Ortega-Moody, Mentor, School of Engineering and Information Systems, College of Business and Technology**

Virtual commissioning for industrial automation is specifically engineered to develop and program the sequences and automation of industrial plants in a virtual environment. Commissioning is usually the last step before the plant starts production. In virtual commissioning, a simulation model of the system is created to replace the real plant. The virtual automation plant is then connected to the real control system (PLCs), so that the simulation can be used simultaneously with the procurement and assembly to verify the design and test the control system. This allows for quicker detection of possible errors. The simulation reacts to the control system's outputs and provides simulated inputs just like the real system would. This enables the engineers or even the customer to see how the system behaves through interactive 3D visualization, not just variables in the control programs, resulting in better software quality and, most importantly, increased safety. This will help to reduce miscommunication of design goals, desired system behavior, and information requirements between engineering design teams and the customer. This research was supported by MSU Graduate Assistantship.

9:45 – 10:00 a.m.

Design engineering - Virtual scenarios for training in automation

CS - 58

***+Adolfo Enrique Samudio Cano, Michael Tyler Edline, Kaleb Toller, +Saihiranmitra Mudiki, Dr. Jorge Alberto Ortega-Moody, Mentor, School of Engineering and Information Systems, College of Business and Technology**

WHAT WAS DONE AND WHY? WHAT WAS FOUND? WHAT DOES IT MEAN? Every manufacturing facility requires preventive and corrective maintenance to their industrial equipment to maintain the performance indicators at the desired level. One of the limitations related to maintenance is the training of new and existing personnel. New personnel are unaware of the necessary steps and skills to perform maintenance on equipment. The lack of available training equipment often requires either shutting down operations which cost the industry money and/or putting trainees and other employees in potentially dangerous situations if mistakes are made during live operations without previous training. At the educational level, students lack the proper industrial level training due to the lack of training equipment and high budget constraints. Universities often train students with obsolete equipment and or lower level training stations compared to those used at an industrial level. For these reasons virtual scenarios for maintenance are proposed. The potential of these laboratories lies in their ability to carry out industrial personnel training in a safer and more efficient way without the limitations of equipment availability and budget constraints. Virtual scenarios lower the cost of maintenance, increase safety, reduce replacement costs for obsolete equipment and open up options for online training. Virtual scenarios for maintenance are able to provide these new possibilities since components possess the physical, electrical, and mechanical characteristics of industry necessary to simulate real behavior without the limitations of having to acquire and maintain a physical laboratory or industrial space reserved for training.

10:00 – 10:15 a.m. **Virtual reality scenario for soil sampling**

CS - 59

+Itzel Adame-García, Dr. Jorge Alberto Ortega-Moody, Mentor, School of Engineering and Information Systems, College of Business and Technology

Ground pollution is the incorporation of strange materials such as trash, toxic waste and chemical products; causes of degradation and erosion of the ground. This produces physical, chemical and biological imbalance; which causes alterations in the fertility without having efficient agriculture, reason for which doing testing and sampling in the lab is necessary. This tool is efficient to analyze the quality of the ground. Nevertheless, superior education in Mexico presents limitations for students to be trained in sampling due to the lack of equipment and high costs. For this reasons the design and implementation of a virtual reality scenario is proposed for sampling, with these students from environmental and agricultural Science can learn the process before getting to the study site. It's necessary to have the knowledge before getting a sample, since without the knowledge resources and time can be wasted. This virtual scenario will reduce time and costs. The institutions will be obligated to improve their teaching methods for the formation of students with a focus on scientific research, technological innovation and creativity to achieve economic, cultural and environmental development.

Concurrent Session – 5th Floor Tower

Moderator: Dr. Chris Miller

8:30 – 8:45 a.m. **The differences in memory between experts and novices**

CS = 60

**Jeremiah Halter, Dr. David Long, Mentor, Department of Middle Grades and Secondary Education, College of Education*

I performed and analyzed two interviews in order to compare the differences in novice and expert thinking in mathematics. One was with a novice, and the other with an expert on the topic of derivatives. In both cases, the subjects had confessed to not having to work with derivatives for a while. The novice answered in a relatively quick fashion to each question, while the expert took time to think about an answer. Throughout the interview, the differences in the answer time between the expert and novice, the quality of the answers of each, and the thought processes revealed in their answers, reveal that experts have a better ability to recall information regarding to the “big idea,” while novices are more apt to remembering the specific contexts the “big idea” was used in.

8:45 – 9:00 a.m. **Why can't we retain principals and teachers in our schools?**

CS = 61

+Crystal A. Fultz, +Brandon E. Richards, Dr. Michael Kessinger, Mentor, Department of Foundational and Graduate Studies in Education, College of Education

For some time in the United States, attaining employment as a school administrator or teacher meant obtaining a reliable and most likely permanent educational position. School administrator and teacher retention has become a problem in education, as they are not staying in the classroom nor the school they currently work in. Nearly half of all teachers are currently leaving the classroom within their first five years of teaching (Ingersoll, 2003). This capstone was to determine what issues exist that might cause school leaders to leave their schools within the first two years as well as what issues contributed to teachers leaving their schools. Factors studied included the culture and achievement of the school and the field experience provided to teachers and aspiring school leaders. The areas of leadership, support, and work environment will all be factors in this study. A random survey was issued to Kentucky educators to receive their feedback, which was used to create solutions to the issue of retention rates.

9:00 – 9:15 a.m. **The design and implementation of a peer mentoring program for international students at Morehead State University**

CS = 62

+Donell C. Murray, Dr. Jeannie Justice, Mentor, Department of Foundational and Graduate Studies in Education, College of Education

Peer mentoring is a way to help guide and form valuable relationships between two or more students and plays an important role in the success, both academically and socially, of students. At Morehead State University (MSU), the International Peer Mentoring Program (IPMP) was designed and implemented in the Fall of 2016 to assist in the academic and social integration of international students. Twenty-seven peer mentors were selected based on leadership and organizational skills in connecting twenty-seven peer mentees to the MSU community. Many of the twenty-seven peer mentors described their mentoring as a multi-faceted endeavor in which guidance, friendship and teaching served as a model for the foundation of IPMP. Communication was an important tool in this implementation and e-mentoring and a face-to-face model were constructed to interface the academic and social integration. Penzu, an online journal, allowed the peer mentors and the peer mentees to detail events and captivate while enjoying their experiences. The academic connection enabled peer mentors and peer mentees to join other peer mentors and peer mentees that needed this assistance while utilizing Blackboard™ course management system as the academic tool. International Student Support Services provided colleague and student support for this implementation.

Concurrent Session – Seminar Room A Room 306

Moderator: Dr. William Green

8:30 – 8:45 a.m. Canada and the trans-pacific partnership: Economic implications and geopolitical advantages

CS - 63

***Max J. Prowant, Dr. William Green, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences**

Twenty-five years after the implementation of the North American Free Trade Agreement (NAFTA), Canadians will have to decide whether to ratify a major trade deal, the Trans-Pacific Partnership, which will join together the twelve Pacific rim countries into one free trade zone. After seven years of secret negotiations, the document was finalized in October, 2015 and will be deliberated in and ratified by each of the twelve countries. If ratified the TPP will be Canada's largest multilateral free trade agreement to date. While many Canadians view the TPP as an essential extension of NAFTA, others doubt its ability to protect the environment, workers' rights, and human rights. This presentation will argue that it is in the best interest of Canadians for the Liberal Party government to ratify the TPP on the basis of the measurable and unquantifiable economic success of NAFTA and the geopolitical advantages of the agreement.

8:45 – 9:00 a.m. Canada's middle east policy: From military to humanitarian engagement

CS - 64

***Tyler Syck, Dr. William Green, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences**

Once a land of mystery and beauty, the Middle East has collapsed into chaos and violence destroying hundreds of thousands of innocent lives. How should Canada act to alleviate the suffering and free people from the grip of authoritarian governments and non-state actors, like the Islamic State (ISIS)? Canada's Middle East policy has been altered by the 2015 federal election from military to humanitarian engagement. Justin Trudeau's Liberal Government has abandoned the approach taken by Stephen Harper's Conservative Government which had imposed economic sanctions on Iran, severed diplomatic relations, and listed the nation as a state sponsor of terrorism and had actively participated in air operations against ISIS. Now Canada has lifted some sanctions on Iran and has terminated combat air strikes and refocused its efforts on training Iraqi forces and responding to the Syrian humanitarian crisis by making it a priority of Trudeau's Government a priority to accept Syrian refugees.

9:00 – 9:15 a.m. Canadian tourism and the temporary foreign worker program

CS - 65

***Johnna Dorn, Dr. William Green, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences**

The Canadian tourism industry has grown substantially since the early 2000s, has expanded its marketing worldwide, and has become an important part of the domestic economy. Despite the challenges of geography, climate, and labor shortages, the tourism industry has grown, because the federal government created the Temporary Foreign Worker Program (TFWP) which permits employers to hire foreign workers for limited periods of time in remote areas as employees in hotels, ski resorts, hunting and fishing lodges and in national parks, positions which are difficult to fill with Canadian or permanent Canadian residents. Improvements have been made to the program making it easier for employers to acquire federal government approval to hire workers, but little has been done to address the abuse of foreign workers and their inability to acquire citizenship. In 2016, a House of Commons Standing Committee reviewed the program and presented its recommendations for the Liberal Government's approval.

9:15 - 9:30 a.m.

The trans-pacific partnership's impact on Canadian agriculture and the supply management system

CS - 66

****Taylor Hunt, Dr. William Green, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences***

The Canadian agricultural industry has a substantial impact on the economic life of every province and has become the world's fifth largest exporter of agricultural products worldwide after the European Union, the United States, China and Brazil. The Canadian agricultural sector is composed of many family farms and small agricultural operations, which could be adversely effected by the Trans-Pacific Partnership (TPP) agreement, because the dairy and poultry sectors are protected by supply management programs. Canada may have to sacrifice these protectionist policies, which keep these agricultural sectors in business, if it participates in the TPP. Whether Canada will participate in the agreement and alter its supply management programs will be decided in Ottawa. The Conservative Party unequivocally supports the agreement and the New Democratic party vehemently opposes it, but the Liberal Government has yet to decide whether to participate in the Trans-Pacific Partnership.

Poster Session

1:15 – 3:00 p.m. Button Drill Room

P = 1

A lifetime of healthy living: Increasing awareness of healthy lifestyles at the Haldeman Community Center

****Kyle Smith, Dr. Joy Gritton, Mentor, Department of Art and Design, Caudill College of Arts, Humanities and Social Sciences***

The health and well-being of an individual is greatly impacted by their level of understanding of the body and how it works. One easy and cost-effective method of promoting healthy lifestyles is to educate youth about the diverse ways lifestyle choices can positively affect the body. This primary prevention program offered fun activities and demonstrations designed to increase awareness of the role diet, exercise, and lifestyle choices play in general health to children (K-5) participating in the Haldeman Community Center's After School Program. The project was supported by an Undergraduate Research Fellowship.

P = 2

The Olmsted Girl's art project

****Marilyn Holmes, Dr. Joy Gritton, Mentor, Department of Art and Design, Caudill College of Arts, Humanities and Social Sciences***

Many girls enrolled in the Frederick Law Olmsted South Middle School (the only public all-girls school in Jefferson County) face difficult challenges. The academic performance of the student body is regarded as "needing improvement" by state assessment standards (it ranks 44.3% on the "Next Generation Learners" scale) and with 85% of the children qualifying for a free or reduced lunch (the rate for Jefferson County district wide is 62%), it is clear that poverty is a factor in the opportunities these girls have to meet their full potential. The Olmsted Girl's Art Project fosters the personal and creative growth of these girls through collaborative workshops and group exhibitions (on-site and on-line) with women of color enrolled in Kentucky's post-secondary institutions. These activities allow college students to have a dialogue with Olmsted students—to talk about the artwork displayed in their school, to answer questions about what it is like to attend college, and for both groups of students to honor their accomplishments and share future plans and dreams. This project was funded by a Kentucky Foundation for Women Art Meets Activism Grant and a UG Fellowship.

P = 3

The semantic awakening: An anthology of translations

****Amina Anwar, Sydney Cook, Elizabeth Von Mann, Cailin Wile, Dr. Philip Krummrich, Mentor, Department of Communication, Media and Languages, Caudill College of Arts, Humanities and Social Sciences***

Four students of the George M. Luckey Honors Program served as editors for an anthology of translated texts. Primarily, fictional works that had never been translated before were included since they further the availability of outstanding world literature. Translations are useful since they allow individuals to gain a broader worldview by increasing understanding, appreciation and respect for other cultures. The submissions were received in a variety of languages (Spanish, French and Latin and genres (poems, short stories, plays). Aspects of compiling these submissions into an anthology such as recruiting contributors, editing, formatting, publishing and the challenges they presented are addressed. This project achieved support from the George M. Luckey Honors Program.

P - 4

Developing translational skills

****Jeffery Couch, Dr. Philip Krummrich, Mentor, Department of Communication, Media and Languages, Caudill College of Arts, Humanities and Social Sciences***

For my undergraduate research I chose a project in written translation as a way of developing my skills in my field. I had taken a class on literary translation and felt ready for a bigger challenge. After this realization I met with my professor and discussed the possibility of working on a translation with the hope of being published. Upon completion of my translation I was approved for publication in a student anthology. My poster will describe the process and materials that I used to translate “Resguardo Personal” by Paloma Pedrero from Spanish into English.

P - 5

Helping non-native speakers adjust to the English-language classroom

****Jessica Hall, Dr. Philip Krummrich, Mentor, Department of Communication, Media and Languages, Caudill College of Arts, Humanities and Social Sciences***

The objective of this project was to determine the best methods to prepare educators to help children whose native language is not English. The hypothesis of this project is based upon the theory that children learn best when put in a situation requiring them to communicate with others via interactive and hands on activities such as games, crafts, and books. Essentially, the theory behind the hypothesis is that if children are able to do the things in class that they would be doing on a daily basis and are intrigued by their environment and engaged in the activities in which they are participating, they will be more likely to develop an interest and maintain their focus as they adjust to English language instruction. This research is supported by an undergraduate research fellowship made available through the Morehead State Academic Honors Program.

P - 6

The journey of planning to implementing: Reestablishing the Eta Epsilon chapter of Lambda Pi Eta

****Madison Wallace, Morgan Getchell, Mentor, Department of Communication, Media and Languages, Caudill College of Arts, Humanities and Social Sciences***

An organization is only as strong as its foundation. Therefore, reestablishing an organization like Lambda Pi Eta— a highly selective communications honors society for undergraduate students that have achieved a high level of academic excellence—requires an ample amount of time, energy and planning. Public relations and event planning are critical elements in the success of building a strong foundation and were pivotal to the reestablishment of the Eta Epsilon chapter of Lambda Pi Eta.

P - 7

The effect of dog training on dog adoption

****Natalie Young, Dr. Philip Krummrich, Mentor, Department of Communication, Media and Languages, Caudill College of Arts, Humanities and Social Sciences***

This research aims to study how training dogs at the local animal shelter affects their chances of getting adopted, as well as what training method works the most efficiently to do so. Field research was conducted at the Tri County Animal Shelter in Clearfield, Kentucky. With this field research, individual dogs were chosen and trained using a general training method. During and after their training, each potential adopter that showed an interest in that certain dog was given information on the behavioral progress the dog had made and the general demeanor of the dog. After sufficient field research had been conducted, additional data was gathered in regards to the success of similar programs, volunteer activity at various animal shelters in Kentucky, and more effective training methods. Upon completion of this research, the findings are to be presented and shared through several online outlets in the hopes that these methods of training can be employed, saving the lives of shelter dogs. I would like to thank Louise Cooper from the Center for Regional Engagement for her contributions to this research.

P-8

Analysis of gunpowder mill explosions in the United States from 1800-1865

***Zachary Coots, Dr. Gary O'Dell, Mentor, Department of History, Philosophy, Politics, International Studies and Legal Studies, Caudill College of Arts, Humanities and Social Sciences**

The manufacture of gunpowder has been a significant industry in the United States from the post-Revolutionary period to the end of the nineteenth century, when traditional "black powder" was replaced by "smokeless" powder. The product being highly combustible and explosive, the occupation was an extremely dangerous one. Consultation of historic newspaper archives located more than 100 powder mill explosions that took place in the United States during the period 1800-1865. The information contained in these accounts has been analyzed to determine the causes, magnitudes, and socioeconomic impacts of these explosions and relate this to the technological evolution of the industry.

P-9

Accents and prosodic phrasing influence wh-question interpretation

***Joe Castle, *Torianne Crouch, *Katherine Griffitts, Dr. Katy Carlson, Mentor, Department of English, Caudill College of Arts, Humanities and Social Sciences**

In a wh-question such as "When did Louisa say that she hurt her ankle?," the wh-word when can attach to and modify the nearest verb ("hurt") or the earlier verb ("say"). We hypothesized that a prosodic boundary between "say" and the that-clause would increase the choice of attaching to the first verb, because the wh-word and that word would be in the same prosodic phrase. We also predicted that accenting either verb should increase the attachment to that verb. In an auditory questionnaire, 52 subjects listened to 20 questions of this type that varied in the absence or presence of a prosodic boundary, and whether the first or second verb was accented. They chose between two interpretations of the question, indicating attachment to the first or second verb. As we thought, accenting verb 1 with a prosodic boundary led to a 63% verb1 attachment rate, while verb 2 accents and no boundary led to a 46% verb1 attachment rate. The other two conditions were intermediate. Overall, the data shows that both accenting and prosodic boundaries influenced attachment, supporting work on other sentence structures. This research was partially supported by NICHD R15HD072713 and NIH 5P20GM103436-13 grants.

P-10

Young writers eastern Kentucky

***Taryn Syck, Dr. Alison Hruby, Mentor, Department of English, Caudill College of Arts, Humanities and Social Sciences**

The objective of this qualitative interview study is to generate knowledge teachers can use to create classroom environments that foster the craft of writing beyond the learning of rules and formulas. Since the advent of standardized testing as the primary tool for measuring school success in kindergarten through high school graduation, writing instruction in high schools has increasingly become about mastering formulas and rules instead of about producing a variety of genres for an array of audiences. Because writers do much more than depend on formulas when creating written text, high school English teachers would benefit from understanding more about young people's behaviors and preferences as writers. To meet the objective of the study, we will interview 30 high school students in eastern Kentucky about their writing habits and predilections.

P - 11

The Giver and I Never Saw Another Butterfly, lighting design

****Blaine Roberts, Paul Yeates, Mentor, School of Music, Theatre and Dance, Caudill College of Arts, Humanities and Social Sciences***

Student created lighting design for The Giver and I Never Saw Another Butterfly. This lighting design had to be created to work cohesively for both shows, which were being performed in a single evening. The designer had to create a plot and color scheme that would work interchangeably. This included hanging, focusing, patching lights, and writing cues for both shows. The end result being Irene Ryan nominations for both shows.

P - 12

Jackson & Wallace: An original play

****Blaine Roberts, Denise Watkins, Mentor, School of Music, Theatre and Dance, Caudill College of Arts, Humanities and Social Sciences***

A look into the world of playwriting, focusing on existentialism. Following the lives of five individuals we see how seemingly meaningless interactions change the course of lives. This play poses the question of purpose; the purpose of each individual life, chance meetings, and the purpose of the play itself. By researching styles such as realism and existentialism this playwright hopes to master all styles. The result: an altogether new genre.

P - 13

Analyzing plays and collecting monologues: Teaching theatre to high school students

****Erin Long, Denise Watkins, Mentor, School of Music, Theatre and Dance, Caudill College of Arts, Humanities and Social Sciences***

This project involved reading a range of plays that could be taught in a high school theatre class. These plays include: The Glass Menagerie, by Tennessee Williams; Silent Sky, by Lauren Gunderson; A Midsummer Night's Dream, by William Shakespeare; A Piece of My Heart, by Shirley Lauro; and A Raisin in the Sun, by Lorraine Hansberry. There are two parts to each play analysis: the monologue collection, and the play's information and analysis. The monologues collected are ones that high school students can use for auditions and class projects. Monologues selected will be organized by sex, age, genre, and length. Other character and monologue information will be included, if applicable. The second section will have information about each play read. This information will include a brief summary of the play, and any relevant information about the play or playwright. This section will also include brief lesson plans. These will be the beginning of lessons that are inspired by the play. The end goal of this project is to create a vast collection of plays myself or other high school teachers could use in classrooms, to have a wider variety of plays to get students interested in theatre.

P - 14

Encycloredia: A beginning guide to oboe reed making

****Timothy Blake Johnson, Dr. Thomas Pappas, Mentor, School of Music, Theatre and Dance, Caudill College of Arts, Humanities and Social Sciences***

This study examines the process, techniques, and materials needed to make high quality oboe reeds. Oboists use a double reed, a piece of cane which has been folded in half and then tied onto a metal tube. The specific requirements of oboe reeds vary from person to person and so it is necessary for serious oboists to learn how to make their own. The process is very difficult to master and can only be learned through practice. All major texts on oboe reed making were studied to determine what was missing from each so that the issues could be resolved in this guide. This guide provides the beginning reed maker with preparatory exercises designed to make the process easier to comprehend. Detailed photographs of the entire process, along with diagrams of oboe reeds are included to make the process understandable for the beginning student. Terminology relevant to the process has been explained in full as it pertains to each section of the text. This project was made possible through the support of the Undergraduate Research Fellowship.

P - 15

The layout, structure, and construction of ancient Mayan residential structures

****Alex Jetter, *Sean Daugherty, *Mitchell Grothaus, Dr. Timothy Hare, Mentor,***
Department of Sociology, Social Work and Criminology, Caudill College of
Arts, Humanities and Social Sciences

During the 2015 and 2016 field seasons, we used unmanned aerial vehicles (UAVs/drones) to map sites surrounding the region of Mayapán in the Northern Yucatán, and create 3D models of these sites. Complete horizontal excavations of several rural house groups were completed. These homes varied widely in size and architectural type, reflecting the hierarchical structure of Mayan society, consisting of commoners, elites, and royalty. Both commoner and elite homes were very similar in layout and grouping, but were starkly different when it came to quality of the architecture and building materials. This research was supported by The Craft Academy and the Brennan Foundation.

P - 16

Mapping and 3D modeling of Mayapán's monumental center

****Madison Cissell, *Samantha McInteer, Dr. Timothy Hare, Mentor,***
Department of Sociology, Social Work and Criminology, Caudill College of Arts, Humanities
and Social Sciences

During our 2016 field season, we mapped and created 3D models of Mayapán's monumental center and several major architectural features. Located in the Northern Yucatán approximately 40km south of modern Mérida, Mexico, Mayapán was the largest ancient Maya political capital of the Postclassic Period and was one of the most densely nucleated of all Maya cities. It was a key center of political, religious, and economic activity. Mayapán's monumental zone is relatively small, but contains a dense collection of temples, colonnaded halls, palaces, altars, and additional structures. We used unmanned aerial vehicles (UAVs/drones) to carry photographic equipment to collect both vertical and oblique photos and videos of the consolidated architecture. The resulting images were processed in photogrammetric software to generate an orthorectified photo mosaic and several 3D models of major architectural features. These products were integrated into a Geographical Information System (GIS) to facilitate analysis. In this poster, we outline the technology and data processing workflow used and display the resulting products. This research was supported by The Craft Academy and the Brennan Foundation.

P - 17

Mapping and 3D Modeling of a terminal postclassic site in the Northern Yucatán

****Rebekah Vermillion, Grace Eden, Cullen Beard, Dr. Timothy Hare, Mentor,***
Department of Sociology, Social Work and Criminology, Caudill College of
Arts, Humanities and Social Sciences

During our 2016 field season, we mapped and created 3D models of several sites in the Northern Yucatán that were scheduled for destruction due to highway expansion. We used unmanned aerial vehicles (UAVs/drones) to carry photographic equipment to collect both vertical and oblique photos of the sites. The resulting photos were processed in photogrammetric software to generate an orthorectified photo mosaic and a 3D model of the entire area. These products were integrated into a GIS to facilitate analysis. In this poster, we outline the technology and data processing workflow used and display the resulting products for a Terminal Classic settlement. The settlement consists of a large platform on which approximately twelve structures are located. Our map encompasses the platform, architectural remains visible on the ground surface, and salvage excavations from several structures and into sections of the platform. This research was supported by The Craft Academy and the Brennan Foundation.

P - 18

UAV-based archaeological research in the Northern Yucatan during the 2016 field season

****Zebulon Hart, Alex Vermillion, Garret Jones, Dr. Timothy Hare, Mentor, Department of Sociology, Social Work and Criminology, Caudill College of Arts, Humanities and Social Sciences***

During our 2016 field seasons, we mapped and created 3D models of numerous excavation sites specifically along a stretch of the Techo-Ochil Highway, near Mayapán in the Northern Yucatán. Complete horizontal excavations of several rural house groups were conducted. We used unmanned aerial vehicles (UAVs/drones) to carry photographic equipment to collect both vertical and oblique photos as well as videos. The resulting images were processed in photogrammetric software to generate orthorectified airphoto mosaics and 3D models of each fieldwork location. These products were integrated into a Geographical Information System (GIS) to evaluate their accuracy and precision, and ultimately to facilitate analysis. In this poster, we outline the technology and data processing workflows used, identify many sites of interest, and report results of tests of product quality. This research was supported by The Craft Academy and the Brennan Foundation.

P - 19

Male peer support theory: Murder and sexual assault

****Albina Laskovtsov, Dr. Rebecca Katz, Mentor, Department of Sociology, Social Work and Criminology, Caudill College of Arts, Humanities and Social Sciences***

The prevalence of sexual assault across a variety of allegedly sacrosanct social institutions, including college campuses, the military, religious, and policing institutions, reveals a serious social problem (Benedict, 1998; Ross, 2015). This includes police shootings of minority group members revealing that African Americans are three and half times as likely to be shot by police compared to whites (Ross, 2015). The problem of sexual assault on college campuses reveals that eighty-five colleges and universities mishandled cases of sexual assault (Cleary Center for Security on Campus, 2017). For example, the University of Montana and the city of Missoula are under a DOJ consent decree for failing to protect women victims. This research conducted a qualitative narrative analysis of online newspapers and magazines, Department Consent Decrees of law enforcement agencies, watchdog groups searching for reports of police violence and sexual assault as well as University sexual assaults by athletes and fraternity group members. Interviews with rape victims and an exploration of rape survivors accounts in “We Believe You” were also reviewed. Findings revealed evidence that male peer support theory and structured action theory explain male police and University athletes and fraternity members’ perpetration of physical and sexual violence.

P - 20

Police violence and the emergence of the black lives matter social movement

****Ivan Benitez, Dr. Rebecca Katz, Mentor, Department of Sociology, Social Work and Criminology, Caudill College of Arts, Humanities and Social Sciences***

Extant research illustrates the disproportionate negative effects of implicit racial bias in policing on young black males (Ridgeway, 2006). Specifically, Black males are more likely to be victims of police brutality than other groups (Gabrielson, Jones, & Sagara, 2014; Blair, Judd, Chapleau, 2004). The result has been a growing sense of the illegitimacy of between law enforcement and residents of black communities. Using a mixed method approach we quantitatively analyzed the 2008 and 2011 Police Public Contact Survey, while qualitatively analyzing social media and news reports of the Black Lives Matter movement. Quantitative findings illustrate that being a young Black or Hispanic male predicted police use of excessive force. Furthermore, whites were more likely to believe that police searches were legal compared to Blacks and Hispanics. The shooting death of Trayvon Martin at the hands of George Zimmerman resulted in the inception of the Black Lives Matter movement. However, the shooting death of Michael Brown in Ferguson Missouri and a number of subsequent shooting deaths of young black males by police around the nation have infused on-going protests and the growth of the Black Lives Matter social movement aimed at improving civil rights for people of color, sexual minorities, and the poor.

P - 21

Association between law enforcement and media portrayals

****Mackenzie Tucker, Josh Richmond, Dr. Elizabeth Perkins, Mentor, Department of Sociology, Social Work and Criminology, Caudill College of Arts, Humanities and Social Sciences***

The media has a strange way of altering societies perception about certain subjects. On and off throughout history, the media has shown many different views of Law Enforcement. Often times when the media depicts Law Enforcement in a negative light, society can catch on to this portrayal and generalize it to all other police officers, and police organizations. However, the negative aspect that they show is only to grab the attention of its viewers, and often leaves out important details about events that occur with law enforcement. In order to test this theory that the media can greatly impact societal views, we developed a survey, of approximately 150 people, to gather information about society and its views of law enforcement based on media portrayals. From social media to multiple news outlets as well as to television shows, the media has the ability to display Law Enforcement in any form that they wish. We are hoping to be able to connect the responses from the survey to establish that the media has influenced the way people view Law Enforcement, rather it be positive or negative. If our hypothesis is correct, this could help explain the current strain between police and society.

P - 22

Exploring young adult males' vulnerability to the sex trafficking industry in a rural state

****McKinley Flint, Matthew Belcher, Kevin Shankle, Dr. Elizabeth Perkins, Mentor, Department of Sociology, Social Work and Criminology, Caudill College of Arts, Humanities and Social Sciences***

After drug-dealing, human trafficking is tied with illegal arms dealing as the second largest criminal industry in the world and is the fastest growing (HHS, 2006). This \$32 billion-dollar-a-year industry is thought to affect more than 30 million people worldwide.

Our research project focuses on data collected through interviews with 40 homeless adult males aged 17-22, in Louisville, KY to achieve a clearer understanding of the nature and scope of male sex trafficking in the state of Kentucky. This information is providing us with a clearer picture of the amount and types of services male victims of sex trafficking require.

Our interview team has been conducting semi-structured, open-ended interviews with homeless young adult males about their background, spending habits, market involvement, customers, pimps, health and needs, experiences with police, and their future expectations. While this study focuses on sex trafficking we are also asking questions pertaining to labor trafficking as well.

While it should be noted that our study is still ongoing, preliminary data shows: 90 percent of men we interviewed had experienced long term or short term homelessness, 80 percent were currently struggling with substance abuse issues, and only 50 percent had completed high school.

P - 23

Corporate social responsibility rating agencies: Comparing rankings, methodologies, and philosophies

****Andrew Blevins, Dr. Michelle Kunz, Mentor, School of Business Administration, College of Business and Technology***

Corporate social responsibility (CSR) entails the approach to environmental, financial, social and philanthropic actions of business. Social investing considers the social good, as well as profit of a corporation when making investment decisions. There are several financial indexes that claim to identify the "most socially responsible" companies. There are also organizations that rank companies on social responsibility, holding corporations accountable, and providing the CSR performance information to the public. Thus, CSR rating agencies vary in purpose, methodologies and philosophies regarding corporate social responsibility. This project analyzes the differences in the most popular CSR ratings organization.

P - 24

Roadmap to a PhD: Navigating the application process

****Bailee Pennington, Dr. Sarah Garven, Mentor, School of Business Administration, College of Business and Technology***

This article serves as a roadmap for accounting practitioners and students who have made the decision to pursue a PhD in accounting and seek guidance in navigating the application process. In it we outline common admission requirements that may prevent or delay acceptance into a program, circumstances that may impede the progress of the application process, important decisions to make during the process, and how to position oneself to be a prime candidate for consideration.

P - 25

MSU college students' perceptions and concerns of studying abroad

****Jordan Bach, Drs. Janet Ratliff and Steve Chen, Mentors, School of Business Administration, College of Business and Technology***

The purpose of this research study was to identify the perceptions and concerns of college students while studying abroad. The study was conducted with 52 Morehead State University college students from a variety of majors in both graduate and undergraduate levels. Data collection occurred in Spring 2016. Between these 52 students, there were two different educational study abroad experiences, one to England, Ireland, and Wales in May and one to Germany and Switzerland in June of 2016. The survey instrument used for this study was divided into nine categories: career and social, diversity and finance, language, importance of study abroad, academic learning, travel issues, individual multi-development, appreciation for travel, and overall satisfaction. This study demonstrated differences in gender and locations among the students who traveled on these two educational study abroad experiences. The results from the surveys provided us with information regarding what students valued most about studying abroad and what their perceptions and concerns were after learning a business-focused curriculum traveling abroad. The results of this research study indicated there was an experience gain for the students, as well as positive gains in social, personal, and career development. Research was supported by MSU Undergraduate Research Fellowship.

P - 26

Financial literacy project of eastern Kentucky

****Kisha Burchett, Michael Harford Mentor, School of Business Administration, College of Business and Technology***

After conducting extensive research on various subjects related to personal finance, I reach out to professors teaching FYS course during the fall semester, and offered to give a one-hour presentation on financial literacy to their students. As a result, I gave 13 financial literacy presentation on campus and reached approximately 225 MSU students.

In order to implement this program within the region, I worked closely with the financial director of the Knott County Board of Education, Greg Conn, and my boss Wes Holland, local Edward Jones financial advisor. I discussed the projects goals with Mr. Conn, and he invited me to Knott County Central High School to educate the students on basic financial concepts. I gave five presentations at KCC and discussed the following topics: budgeting, paying for college, monitoring and improving one's credit score, planning for retirement, and savings for future educational expenses. Wes Holland has arranged for me give financial literacy presentations at Rowan County Middle School in May, as well. Furthermore, Mr. Harford has guided me through this process, and insured the success of this program. This research was supported by the Morehead State University College of Business and Technology Undergraduate Fellowship.

P - 27

Nonprofit leadership education in Appalachian universities

****Nathan Blevins, Michael Harford, Mentor, School of Business Administration, College of Business and Technology***

This research looks at data from university course catalogs, the Integrated Postsecondary Education Data System, and other sources to provide an overview of the nonprofit leadership education being offered by universities in Appalachia. This analysis gives insight into what these programs and courses teach, how the programs are organized, how many universities are providing this education, and how current education on the subject differs from that of previous years. This research is beneficial both in assessing the state of nonprofit leadership education in the area, and in thinking of how this education might be changed or improved in the future.

P - 28

Utilization of pareto charts in engineering design

****+Linya Shu, Xiaotong (Victoria) Pang, Dr. Hans Chapman, Mentor, School of Engineering and Information Systems, College of Business and Technology***

Engineering design is a part of the process in the product realization that aim to generate and develop the best product to satisfy customer needs before manufacturing. The design phases including: (1) Formulation, (2) Concept Design, (3) Configuration Design, (4) Parametric Design, and (5) Detail Design which had been similarly proposed by engineering design researchers such as Pahl, Beitz, Dixon and Poli (Eggert, 2010).

Each phase relates to various activities and decision-making processes to determine the form with given functions from customer. Thus, the utilization of problems-solving tools will be the inevitable requirement for engineering designers. The purpose of this research paper is to identify how Pareto Charts could be utilized in solving engineering design problems in a general way including the examples of other researches.

P - 29

Performance analysis of stand-alone hybrid energy systems in Rowan County, KY

+Oluwafemi Oyeniran, *+Saihiranmitra Mudiki, Drs. Hans Chapman and Nilesh Joshi, Mentors, School of Engineering and Information Systems, College of Business and Technology

Climate change, high operating costs, on established energy sources and increased energy demand are motivating factors that are driving the development and use of renewable energy sources. Solar, wind and energy storage systems are fast becoming sustainable alternatives with potentials to satisfy the load demand of the future. However, single renewable sources have time-varying characteristics without the potential to meet the energy demand over a year, hence the hybrid energy systems become even more desirable.

This research presents a performance analysis for modelling, configuration and citing a stand-alone hybrid system consisting of a wind turbine, photovoltaic (PV), combined heat power (CHP) and battery storage in a Rowan County community, Kentucky. With an average load demand that average of 5000KWH/ day and a peak load of 400KW, the performance analysis is developed using MATLAB computational software. The key objective is to develop an autonomous energy supply system capable of replacing existing coal-generated, non-renewable energy source in the county.

P - 30

Mechanical to electrical hydro-energy converter

****Robert Rowlett, *Lindsay Childs, Dr. Hans Chapman, Mentor, School of Engineering and Information Systems, College of Business and Technology***

There is a pressing need to develop new energy systems. Fossil fuels are running out. This project demonstrates that small portable hydroelectric generators are a plausible solution to energy needs. This hydroelectric generator functions when water is poured into the cylinders where the water compresses the spring before it rushes out and the spring is quickly depressed. A water pump is attached to the power output to fill the containers again. This oscillating motion produces magnetic induction, and with it renewable energy. This presentation exhibits the different outputs when the number of coils, gauge of wire, and strength of magnets differs on two different designs. The next step of this project will be to constructing a final model.

This project can be used as a backup generator in the common house, or to power a home with a stable source of vertically descending water flow in a larger scale design. The device can later be designed to put underground water flow to use for public parks.

P - 31

Photovoltaics in Eastern Kentucky: The feasibility study of abundant renewable energy resources

****Adam Stanley, Sanghyun Lee, Mentor, School of Engineering and Information Systems, College of Business and Technology***

Photovoltaics (PV-also called solar photovoltaic devices) are used to harness the power of the sun via the electronic process that occurs within semiconductor cells. The solar energy is absorbed by the cells, which causes the electrons to break away from their atoms, allowing them to flow within the material to produce electricity. This electricity will become the renewable energy for Kentucky, as the generation of coal will but come to a stop within the near future.

In the present work, we systematically studied about renewable energy resources, in particular, solar energy for the application of photovoltaic panels in Eastern Kentucky. By analyzing data from our PV cells at Morehead State University designed to follow the direction of the sun for optimized output and by incorporating MPPT charge controllers, we have constructed a maximum power algorithm that performs best for the location. Utilizing these, measurements of daily electricity production in comparison to the average power needed for household use has validated our research. Knowing this, being a prime location we can now push to enable the advancement of renewable energy production and become less dependent on fossil fuels, thus creating an infrastructure that will run off solar power.

P - 32

Applications of industrial robots in the classroom

****Kaleb Toller; +Adolfo Enrique Samudio Cana; Michael Edline, Dr. Jorge A. Ortega-Moody, Mentor, School of Engineering and Information Systems, College of Business and Technology***

Parallel robots are growing in popularity in industry for their agility and speed. Although they may have a smaller work space compared to serial robots they move within their workspace more quickly and efficiently. A nice bonus for assembly lines with pick and place operations. A growing concern about industrial robots in general is training. The most expensive portion of the hiring process in any field is training, to tackle this issue a group of students at Morehead State University have created a Delta robot including a functioning teach pendant that functions and feels like a real Fanuc teach pendant. The teach pendant allows students to program a virtual delta robot and run simulations and later use the same program on the physical classroom robot shared by multiple students. For half the price of a Fanuc LR Mate 200iD a classroom could have a fully functioning delta robot with ten teach pendants making industrial training affordable and allowing young students a competitive edge in the job market.

P - 33

Design engineering delta robot applications for training

****Michael Edline, Kaleb Toller, +Adolfo Enrique Samudio Cana, Dr. Jorge A. Ortega-Moody, Mentor, School of Engineering and Information Systems, College of Business and Technology***

Technical Training for industrial robots has been a concern in automation attributable to production cost, software, and fee for training. For a school to purchase an industrial robot, one must have setup space for work stations and be capable of affording each unit. Work space for stations and affordability has been a leading cause in why students lack hands on experience with robots in an industrial environment. Our team is providing research with design and manufacturing an affordable robot using SolidWorks 3D CAD design software, 3D printers, and the HAAS CNC Machine. Fully Designed in 3D software a transfer of the Delta Robot can be altered from reality into virtual reality. Virtual Reality has offered opportunities to provide hands on experience to students from industrial equipment without the possibility of ever touching the unity. We have found by producing a virtual environment to simulate real world applications is a safe way of training students for operation control, maintenance, and programming. Thus, training for automation transforms from an exclusive limited source to an opportunity in the number of certifications increasing through virtual reality.

P - 34

Will appropriate behavior continue without recognition?

****Cassandra Tucker, Dr. Daniel Grace, Mentor, Department of Early Childhood, Elementary and Special Education, College of Education***

The behavior in first grade can be unpredictable and non-consistent. Data was collected for six weeks, to test the likelihood that appropriate behavior will occur with and without incentives, as a whole class. During those six weeks, the week's behavior management strategies alternated between giving incentives for appropriate behavior and not giving incentives for appropriate behavior. The data collected is very intriguing.

P - 35

Seeing in color: Does colored ink increase retention of the names of colors?

****Colby Creech, Sarah Eades, Lindsey Fugate, Casey Hogg, Dr. Daniel Grace, Mentor, Department of Early Childhood, Elementary and Special Education, College of Education***

In this study, the researchers have compared the use of colored ink on the retention of the names of color words. Students at this age are more concrete learners, therefore teaching them with color coded words will increase their reading fluency. Two groups of students have been tested, one of which received flashcard practice of colored words in the same colored ink and one with flashcard practice of color words printed in black ink. This research took place over the course of six weeks in two kindergartens and two first grades in eastern Kentucky.

P - 36

Effects of student choice on reading stamina

****Joy Buckler, Dr. Daniel Grace, Mentor, Department of Early Childhood, Elementary and Special Education, College of Education***

Some literacy experts suggest that by increasing the reading stamina of elementary students, comprehension of text will also increase. Teachers in a rural eastern Kentucky school often use stamina reading strategies in a school-wide effort to improve literacy skills. Over the duration of 6 weeks, researchers collected data on the effect of student choice in relation to stamina. Students alternated seating arrangements between structured, assigned seats to student-choice seating in an attempt to determine if their choice increased reading stamina. This research project was supported and made possible by the Rowan County School district.

P - 37

The effect preschool attendance has on kindergarten success

****Katlin Ratliff, Sharon Benton, Mentor, Department of Early Childhood, Elementary and Special Education, College of Education***

Many students come to kindergarten having experiences from being in preschool for many years while other students arrive at kindergarten with no prior school experiences. Early childhood educators often say that students who come to kindergarten with experience from preschool tend to perform much better in the classroom. In this seven-week study student's behavior and academic performance in a regular classroom were examined and data was compared between preschool and non-preschool attending students.

P - 38

I love myself! The effects of positive self-talk on behavior

****Marymargret Charles, Rachel Huesman, Sharon Benton, Mentor, Department of Early Childhood, Elementary and Special Education, College of Education***

The only person who controls a student's behavior is themselves. Teachers can only influence behavior in a positive or negative way. The question was raised: Would positive self-talk effect student's behavior? The subject school uses a clip-up/clip-down system. The phrase, "I can make good choices. I am in control of my choices." was used to promote positive self-talk. The research found that students exhibited more desired behaviors when they participated in positive self-talk, as directed by the teacher, than when they did not.

P - 39

Training to be CHAMPS: How training affects behavior

****Jennifer Caudill, Katie Clark, Brittany Moore, Mckensy Ogletree, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary and Special Education, College of Education***

Many schools today are trying to focus on positive reinforcement rather than negative reinforcement. This study was based on the CHAMPS (Conversation, Help, Activity, Movement, Participation, and Success) school wide system of behavior management used in a small elementary school in Eastern Kentucky. It examined the rewards given in this school. This research project focused on the effects of training of faculty and staff and their distribution of rewards. Data on how faculty and staff distributed rewards were collected before and after effective training was implemented. Subject interviews provided enhanced understanding of implementation procedures

P - 40

Flexible seating and how it effects student assessment

****Leah Oldfield, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary and Special Education, College of Education***

Traditional classrooms provide stationary seating; therefore, flexible seating isn't an option in most classrooms. This study collected data concerning students' choice in types of seating such as: yoga balls, revolving stools, creates with a choice of a cushion or back support chair, and the choice of a regular classroom chair. Comparatively, in this study, third grade students partook in weekly spelling assessments in various seating styles. Throughout the six weeks of this study, the researcher compared spelling assessment results and the type of seating selected. This study determined how flexible seating affects student assessment.

P - 41

The effects of reading aloud on off-task behavior

****Lexie Clayton, *Rachel Chaney, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary and Special Education, College of Education***

Many educators say that most instructional time is gained in the morning. As the day progresses, students become less engaged, resulting in an increase in off-task behavior. In this study, researchers collected data on 5th grade student behaviors from Rural Eastern Kentucky to test this claim. Researchers examined the effects of a reading/listening strategy on off-task behavior in the afternoon in order to determine if the intervention would improve student's behavior. This project was supported by Rowan County Schools.

P - 42

Coloring the lights blue

****Megan Messer, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary and Special Education, College of Education***

Reading instruction in an elementary classroom is extremely important. In most classrooms any kind of independent work leaves room for a large amount of off task behaviors. Students are often subjected to bright fluorescent lighting during this time and students often request to turn them off. This is impractical, as removing light results in a classroom that is too dark for learning. Studies on light and color suggest that they have a strong effect on behavior, mood, and concentration. This study, completed in a split 2nd/3rd grade classroom in Rowan County, examined the use of blue light filters (placed over fluorescent lighting) to determine if their use had a positive effect on concentration and behavior during reading instruction.

P - 43

Let there be light: Does light influence transition behavior?

****Shelbie Crowe, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary and Special Education, College of Education***

Typical classroom transitions include changing textbooks, rotating between learning centers, and leaving the classroom. Instructional time may be lost during transitions. When students move between structured activities, their unstructured, transition time often becomes an opportunity for misbehavior. Students frequently become distracted, begin talking, or wander around the classroom. Handling transitions is an aspect of classroom management that is often difficult for preservice teachers and new teachers. This six-week study conducted by a pre-service teacher, examined the effect of light on transitional behaviors in a K-1 classroom. Data, collected when students left the classroom and returned, was analyzed to determine if the amount of light in the classroom had any effect on appropriate student transitional behaviors.

P - 44

Engineering design project: Hydroelectric power station

****Justin Elswick, Dr. Lesia Lennex, Mentor, Department of Middle Grades and Secondary Education, College of Education***

Developing enthusiasm and creativity to resolve world energy problems is a dilemma facing educators. How can educators bring the excitement of real-world issues into their classrooms? What kind of affordable equipment can they use? This project seeks to develop materials and means through which Middle and High School students can creatively engineer solutions to existent problems. In this case, what kind of turbine in a gravity-fed system, would generate the most energy? This project was made possible through an Undergraduate Research Fellowship. Special thank you to Dr. April Haight, Dr. Hans Chapman, and GA Ethan Rowley.

P - 45

Preparing practitioner/scholars: A stakeholder-based evaluation of MSU's Doctorate in Educational Leadership

****Lauren Myre, Dr. John Curry, Mentor, Department of Foundational and Graduate Studies in Education, College of Education***

The purpose of this research is to conduct a stakeholder-based evaluation (Fitzpatrick, J. L., Sanders, J. R., & Worthen, B. R., 2011) of Morehead State University's Doctorate of Educational Leadership program. The evaluation is to determine the effect and scope the program is having on current students as well as graduates of the program. The researcher will detail satisfaction with the program, job mobility, program strengths and weaknesses, as well as attempt to document the breadth of the program's influence in education in Kentucky and other states. Stakeholder suggestions for the program will also be included. This project is supported by an Undergraduate Research Assistantship.

P - 46

Accelerated education – Is it worth it?

****Nicholas Kessinger, *Hunter Matthews, *Kaitlyn Wheeler, Dr. Michael Kessinger, Mentor, EDSE 399 Selected Topics, Department of Foundational and Graduate Studies in Education, College of Education***

Over the past several years, there have been opportunities to offer accelerated education for students that demonstrated high academic knowledge based on their ACT scores early in their high school years. Most recently a program at Morehead State University, the Craft Academy for Excellence in Science and Mathematics, was established for the purpose of engaging students during their last two years of high school with rigorous education opportunities. Over the last two years, 120 students have been admitted to the Craft Academy based, in part, on their ACT scores. With these opportunities, one might ask: "Is it worth it?" Little research has been completed that investigated the impact of these types of accelerated learning, especially when it occurs within a full university residential setting. This study took one instance of an accelerated learning opportunity, the Craft Academy, and analyzed the impact that it had on increasing students' ACT scores. This was accomplished by comparing the initial ACT performance of students admitted to the Craft Academy to their junior year's ACT scores. In addition, ACT performances were correlated to the first semester GPA for each student. Initial findings indicated higher ACT performance following two semesters of college course work.

P - 47

Impact of two-stage weaning on calf growth, behavior, and vocalizations

****Lisa L. Seim, Emery O. Clark, Katlyn R. Vencill, Drs. Patricia L. Harrelson and Flint W. Harrelson, Mentors, Department of Agricultural Sciences, College of Science***

Removal of the dam and main source of nutrition at weaning results in increased stress (vocalizations/ activity) for calves. Two-stage weaning uses an anti-suckling device placed in the calf's nostrils 4-7 days prior to weaning to help alleviate stress. We hypothesized that with the use of anti-suckling devices, calves would vocalize and walk less, and not depress weight gain. Calves (n = 51) were utilized in a completely randomized design. Calves were stratified by weight and randomly assigned to 1 of 3 treatments; control, 2 days with device prior to weaning or 4 days with device prior to weaning. Data were analyzed using the MIXED procedure of SAS with sex and treatment, as fixed effects. No differences (P > 0.55) were observed for any growth parameters based upon treatment. We observed a treatment × day interaction for calf vocalizations (P < 0.0001). For calf behavior, we observed a linear treatment effect for eating (P = 0.0026), treatment × day interaction for suckling (P = 0.0079), and a linear treatment effect for walking (P = 0.0162). These results suggest that anti-suckling devices can be useful in reducing stress at weaning in cattle. This research was supported by MSU Undergraduate Research Fellowship.

P - 48

Improving soil health with a multispecies cover cropping system: Preliminary and intermediate data and analysis

**Taylor Saunders, Dr. Brent Rogers, Mentor, Department of Agricultural Sciences, College of Science*

Cover cropping is a cultural practice that can be used for soil health improvement. Organic matter accumulation and high levels of microbial activity near the soil surface can prove beneficial. Cover crops can provide increased levels of nitrogen through symbiotic fixation and can help recycle other nutrients thereby reducing producer costs. In the fall of 2012 a multi-species cover crop was established on part of a field that had been used for 15+ years to produce corn (Zea mays) silage under a conventional or reduced tillage. In the fall of 2014 soil health tests were conducted on the cover cropped portion of the field and on the non-cover cropped portion of the same field. In 2015 and 2016 soil health tests were repeated. Soil health tests measure characteristics such as aggregate stability, porosity, and biological activity, for instance, the number of earthworms per cubic foot of soil. Three years of data appear to show a trend toward soil health improvement, however there is year to year variation. Indicative of this improvement is the increase in earthworm numbers in the cover cropped areas compared to non-cover cropped areas. Research was supported by the MSU Department of Agricultural Science and MCTCS.

P - 49

Thyroid hormone receptor expression in the developing retina of *Xenopus laevis*.

**Abby Jones, Dr. Kurt Gibbs, Mentor, Department of Biology and Chemistry, College of Science*

During metamorphosis, *Xenopus laevis* tadpoles lose the ability to regenerate central nervous system (CNS) tissue due to the surge of thyroid hormone that occurs while transitioning to the adult form. The optic nerve and retina of the frog, however, retain regenerative ability throughout adulthood, as these tissues are partially unresponsive to thyroid hormone. We hypothesized that a possible explanation for this ability is an alternatively spliced thyroid hormone receptor (TR) transcript, preventing retinal cells from binding and responding to thyroid hormone. To test this hypothesis, we cloned each exon of the TR alpha gene and synthesized exon-specific riboprobes to test for the presence of mRNA of each individual exon, in both tadpole and juvenile retinæ, using in situ hybridization. The goal of this work is to further understand how thyroid hormone and progressing development effect the loss of regenerative capacity in the vertebrate CNS. This work is supported by funding from NIH Institute of Child Health and Human Development (1 R15 HD076643-01A1).

P - 50

Characterizing the microglial response in *Xenopus laevis* after spinal cord Injury

**Anna Knox, Dr. Kurt Gibbs, Mentor, Department of Biology and Chemistry, College of Science*

Xenopus laevis tadpoles exhibit the ability to regenerate central nervous system (CNS) tissue after injury, an ability which is lost after metamorphosis. In mammals, microglia respond to CNS injury by releasing inflammatory cytokines, negatively affecting the potential for functional recovery. Since microglia are the immune cells of the central nervous system, we hypothesized that the microglial response to CNS injury may be different between tadpoles and adult frogs. To test this hypothesis, we used two antibodies, AM20 and CL21, to target specific proteins in microglia to allow their visualization. We then used immunofluorescent microscopy to view and quantify these inflammatory cells. The goal of this work is to understand the changing inflammatory response attributed to microglia at different stages of spinal cord injury, and determine its significance to regeneration of the CNS in *Xenopus laevis*. This work is supported by funding from NIH Institute of Child Health and Human Development (1 R15 HD076643-01A1).

P - 51

Potential celecoxib analogue precursors derived via aldol condensation

****Faith Peters, Dr. Mark Blankenbuehler, Mentor, Department of Biology and Chemistry, College of Science***

Various indanone compounds, 1-indanone and 1,3-indanedione specifically, have the potential to undergo Aldol condensations to form precursors to compounds structurally similar to the Non-Steroidal Anti-Inflammatory Drug (NSAID) Celebrex (Celecoxib). A series of potential analogous precursors in the form of alpha-beta unsaturated ketones have been developed. The conversion of these precursors into pyrazoline compounds was attempted. After oxidation of the pyrazoline compounds, they could potentially have biological activity by acting through Cyclo-oxygenase-2 (COX-2) in the same manner to Celebrex.

P - 52

The use of eDNA to detect bacterial molecular markers in the Triplett Creek Watershed

****Hannah Conley, Rachel Brown, Dr. Geoff Gearner, Mentor, Department of Biology and Chemistry, College of Science***

The objective of this study is to develop and evaluate the use of bacterial genetic targets as markers of fecal contamination in the Triplett Creek Watershed. The Triplett Creek Watershed has been the focus of assessment and research activities by Morehead State University scientists for well over ten years now. In this project, three-liter water samples were collected from six watershed sampling sites. The sites were chosen because they exhibit chronically high *Escherichia coli* counts (>240 *E. coli* CFU/100 mL), or acceptable *E. coli* counts (<240 *E. coli* CFU/100 mL). DNA was extracted from the water samples and purified using commercial kits, then assessed spectrophotometrically for quantity and purity. The environmental DNA (eDNA) was used as a target for polymerase chain reaction to detect markers for enteric bacteria, *E. coli*, and a variety of antibiotic resistance genes.

PCR products were analyzed by agarose gel electrophoresis. Some of the eDNA samples were positive for enteric bacteria, *E. coli* and the β -lactamase gene, blaTEM. The results demonstrate the ability to detect bacterial molecular markers in DNA collected directly from environmental water samples, allowing us to develop this further for *E. coli* source tracking in the Triplett Creek Watershed. This project is supported by a Kentucky Water Resources Research Institute 104b Student Enhancement Project grant via the U. S. Geological Survey.

P - 53

Developmental expression of Lin28 in *Xenopus laevis* hindbrain

****Holly Ward, Dr. Kurt Gibbs, Mentor, Department of Biology and Chemistry, College of Science***

As tadpoles, *Xenopus laevis* can regenerate their spinal cord after injury, while juvenile frogs cannot. Lin28 is a RNA-binding protein primarily known for its role in regulating pluripotency of stem cells, by binding to and participating in degrading microRNAs that trigger differentiation. We identified Lin28 as being downregulated in juvenile frog hindbrain after spinal cord injury by microarray analysis. We used qRT-PCR to quantify Lin28 expression and immunofluorescent staining to determine the types of cells expressing Lin28 in the hindbrain. We show that Lin28 is expressed in hindbrain nuclei that have shown the potential to regenerate axons after spinal cord injury. We determined that Lin28 expression is developmentally regulated, is not affected by spinal cord injury, but may have a role in regulating the expression of microRNAs in differentiated neurons. This work is supported by funding from NIH Institute of Child Health and Human Development (1 R15 HD076643-01A1).

P = 54

Quantifying myelin preservation after spinal cord crush injury in *Xenopus laevis*

****Jasmine Prince, Dr. Kurt Gibbs, Mentor, Department of Biology and Chemistry, College of Science***

Xenopus laevis frogs are a unique model organism for many experiments in the fields of developmental biology and neurobiology, due to the regenerative capacity of the central nervous system of the tadpole. Once the animal reaches prometamorphosis, it is no longer able to regenerate its central nervous system after injury. Previous studies using *Xenopus* tadpoles have focused on regeneration after completely transecting the spinal cord. We have developed a crush injury model to more closely replicate human injuries, as fewer than 5% of human spinal cord injuries involve complete transection. In spinal cord injury models, the degree of myelin preservation after injury can be directly correlated with functional recovery. Here we use a myelin specific antibody to quantify myelin preservation after spinal cord injury, demonstrating developmental differences in functional recovery in tadpoles and adult frogs. This work is supported by funding from NIH Institute of Child Health and Human Development (1 R15 HD076643-01A1).

P = 55

Comparison of species richness of lichens in arboreal and terrestrial zones at Eagle Lake Watershed, Morehead, Kentucky

****Jesseca Dale, Dr. Allen Risk, Mentor, Department of Biology and Chemistry, College of Science***

Lichens are a symbiotic relationship between two separate organisms, an alga and a fungus. The dominant partner that gives the lichen physical characteristics is the fungus. Lichens perform many important ecological roles in forests including nitrogen fixation, removal of heavy metals, and providing nesting material for organisms. Since forests are three dimensional, determination of lichen richness is difficult because they are found on the ground and in the trees. The proposed research plan is to compare lichen species richness on the ground and in the trees by use of single and doubled rope techniques to access tree crowns within 20 X 20 meter plots. Samples will be collected from soil, rocks, woody debris, understory shrubs trees, and overstory trees within each plot. A stratified sampling procedure based on tree zones will be used to assess the lichens in both understory and overstory trees. This research was supported by an Undergraduate Research Fellowship of Morehead State University

P = 56

Assembling a neuroanatomical atlas of *Xenopus laevis* central nervous system

****Jessica Eskridge, Dr. Kurt Gibbs, Mentor, Department of Biology and Chemistry, College of Science***

Xenopus laevis is a model organism used by developmental biologists and geneticists around the world. Our lab is interested in studying the development and regenerative capacity of the central nervous system (CNS), using *Xenopus* to demonstrate the developmental decline of CNS regenerative ability. Although *Xenopus* neuroanatomical data are well-established, we wanted to assemble a reference manual specifically for use in our lab. This project focuses on assembling a comparative atlas of tadpole and juvenile CNS, identifying major brain nuclei and the development of white matter tracts. This work is supported by funding from NIH Institute of Child Health and Human Development (1 R15 HD076643-01A1).

P - 57

Adapting an organic chemistry course for the visually impaired

****Joseph Cramer Schneider, Dr. Brandon VanNess, Mentor, Department of Biology and Chemistry, College of Science***

Incorporating visually impaired students into classes that rely heavily upon visual communication can be highly challenging. Organic chemistry presents special challenges and safety issues that need to be addressed in order to fully incorporate visually impaired students. This project relates different strategies and techniques that were utilized to adapt CHEM 201, the Survey of Organic Chemistry course, for the visually impaired. New technology allowed access to finely detailed tactile images that were previously inaccessible in the classroom. Strategies that provided audible relay of visual outputs permitted greater student independence in the laboratory setting. Overall, these strategies improved the relay mastery of course content and techniques while fully involving visually impaired students in the course. Financial support for the materials necessary to create these adaptations was provided by the Office of Disability Services and the Department of Biology and Chemistry.

P - 58

Characterizing the inflammatory response after spinal cord injury in *Xenopus laevis*

****Linzi Watson, Dr. Kurt Gibbs, Mentor, Department of Biology and Chemistry, College of Science***

Anuran amphibians, such as *Xenopus laevis*, can regenerate central nervous system (CNS) axons as a tadpole but lose this ability during metamorphosis. The inflammatory response to spinal cord injury represents a significant obstacle to functional recovery in mammals and has yet to be characterized in *Xenopus laevis*. It is possible that the tadpole inflammatory response is reduced compared to that of adults as a result of developmental age. Another possibility is that tadpoles contain active genes capable of resolving the inflammatory response that are inactive after metamorphosis. To test these hypotheses, we examined the expression levels of pro-inflammatory cytokines (TNF α and IL1 β) and anti-inflammatory cytokines (CD206 and TGF β) in tadpole and adult frogs after spinal cord injury. By studying the immune response occurring in *Xenopus laevis*, we hope to gain a better understanding of the factors related to spinal cord regeneration after injury. This work is supported by funding from NIH Institute of Child Health and Human Development (1 R15 HD076643-01A1).

P - 59

Assessment of the influence of Hoxd10 on the regeneration of spinal cord in *Xenopus laevis*

****Maggie Pollitt, Dr. Kurt Gibbs, Mentor, Department of Biology and Chemistry, College of Science***

During development, Hox genes play a significant role in regulating the anterior-posterior patterning of all vertebrate animals. During the normal development of *Xenopus laevis*, the Hoxd10 gene is expressed in the unoperated tadpole and becomes downregulated in the unoperated juvenile animal. In the spinal cord injured tadpole, however, Hoxd10 expression is significantly downregulated, whereas no change in expression is observed in the juvenile animal. We hypothesized that this downregulation from the unoperated tadpole to the operated tadpole may affect the regenerative ability of tadpoles with spinal cord injury. To test this hypothesis, we analyzed Hoxd10 expression in the acute spinal cord injury paradigm using real-time PCR and in-situ hybridization. The goal of this project is to determine the role of Hoxd10 in spinal cord regeneration, in contrast to the adult animal which does not have this ability. This work is supported by funding from NIH Institute of Child Health and Human Development (1 R15 HD076643-01A1).

P = 60

Promoter mapping indicates potential mechanism of co-regulation of DNA damage induced genes umuDAb and ddrR in Acinetobacter baylyi

***Megan Peterson, Dr. Janelle Hare, Mentor, Department of Biology and Chemistry, College of Science**

In many bacteria, DNA damage induces an SOS response that is mediated by LexA. Upon DNA damage, LexA self-cleaves, allowing promoters to begin transcription of SOS genes. While the Acinetobacter genus lacks LexA, it features another protein, UmuDAb, that behaves like a LexA by regulating two DNA damage-induced genes, umuDAb and ddrR, through a putative repressor mechanism. UmuDAb has been shown to bind to the putative promoter region between divergently transcribed ddrR and umuDAb in Acinetobacter baumannii. In Acinetobacter baylyi, mutations in this promoter region abolishes repression or prevents transcription of both genes. The transcriptional start sites of these genes were mapped to understand the relationship between the UmuDAb binding site and the promoters for these two genes. We hypothesized that ddrR and umuDAb have overlapping -35 promoter consensus elements, and that this allows UmuDAb to co-regulate expression of both genes. This idea was tested using 5' RACE PCR to determine potential +1 sites for umuDAb and ddrR transcripts. The +1 sites indicated by these experiments predict overlapping -35 promoter consensus elements for umuDAb and ddrR. These data suggest that UmuDAb represses both genes by binding to DNA to block polymerase access to both the umuDAb and ddrR promoters.

P = 61

The Papilionoidea (true butterflies) of Rowan County, a biodiversity meta-analysis

***Rachel Brown, Dr. Sean O'Keefe, Mentor, Department of Biology and Chemistry, College of Science**

Members of the order Lepidoptera (butterflies, moths, and skippers) play important ecological roles and may be used as indicators of environmental health. Within Lepidoptera, the superfamily Papilionoidea constitutes the "true butterflies" and includes the families Papilionidae, Pieridae, Lycaenidae, Nymphalidae, and Riodinidae. Nearly a hundred species of Papilionoidea are known from Kentucky. Charles Covell, Jr.'s 1999 work *The Butterflies and Moths (Lepidoptera) of Kentucky: An Annotated Checklist and its three supplements* document 563 species of Lepidoptera recorded from Rowan County, including thirty-four Papilionoidea. Our meta-analysis updates Covell's Rowan County Papilionoidea records via data from The Society of Kentucky Lepidopterists and the current Lepidoptera collections of Morehead State University (MSU) and A. Jonathan Smith. This poster shows the results of our survey, providing members' common and scientific names, Hodge number, and phenotype. We identify twenty-seven new listings: one in Papilionidae, four in Pieridae, eleven in Lycaenidae, and eleven in Nymphalidae. No specimens of Riodinidae were detected. This places Rowan County's biodiversity at six, eight, eighteen, twenty-nine, and zero species respectively, which brings Rowan County's total Papilionoidea to sixty-one. We thank the MSU Department of Biology and Chemistry for partial funding and A. Jonathan Smith for providing specimens to photograph.

P = 62

Developmental changes in glial scar formation in *Xenopus laevis* following spinal cord injury

***Seth Turner, Dr. Kurt Gibbs, Mentor, Department of Biology and Chemistry, College of Science**

Following damage to the central nervous system (CNS), the injury site is infiltrated by microglia and astrocytes that serve to wall off the dying tissue from the rest of the CNS. Previous work has shown that chondroitin sulfate proteoglycans (CSPGs), a component of the extracellular matrix secreted by reactive astrocytes, play a role in inhibiting the regeneration of axons through the injury area. *Xenopus laevis* is an excellent experimental model to study spinal cord injury (SCI), as tadpoles are able to regenerate their spinal cord following injury, and lose this ability while approaching metamorphosis. We hypothesized that differences in the glial response to SCI may confer regenerative ability in the tadpole spinal cord. We used a CSPG specific antibody and Glial1, an astrocyte specific antibody, to characterize the developing glial scar. Our data indicate that the glial scar is present in the injury site of adult frogs, but absent in the spinal cord injured tadpoles. This work is supported by funding from NIH Institute of Child Health and Human Development (1 R15 HD076643-01A1).

P = 63

Palynology of Big Bone Lick: Evidence for megaherbivores and high salinity

****Carissa Sweeney, *Tucker Jett, Dr. Jen O'Keefe, Mentor, Department of Earth and Space Science, College of Science***

We know a lot about the plants that grew at Big Bone Lick State Historic Site in the Pleistocene because of macrobotanical remains, but no previous study has successfully extracted pollen from the sediments. The enzymatic technique developed in the OPaL lab was utilized and resulted in successful extraction of pollen, spores, and algal remains. These microfossils include abundant dung fungi, from which megaherbivore density can be estimated. Additionally, the first direct evidence for both provenance of the sediment and salinity of the environment at the time of deposition are present. This project reflects a major advance in our understanding of the paleoecology of the birthplace of vertebrate paleontology in the United States.

P = 64

Prospecting for iron in the Galactic Supernova Remnant W49B - SSE 399 -- Research Methods

****Eddi Akers, *Taylor Ray, Drs. Thomas Pannuti and Jeannie Justice, Mentors, Department of Earth and Space Science, Department of Foundational and Graduate Studies in Education, College of Science, College of Education***

We have analyzed an archival 54 kilosecond observation made of the Galactic supernova remnant (SNR) W49B with the Chandra X-ray Observatory. W49B is an X-ray and infrared luminous SNR that lies at an estimated distance of 11 kiloparsecs: while some observers have claimed that this source was produced by the death of a white dwarf in a supernova explosion, others have argued that the SNR was created in the aftermath of a gamma-ray burst. To investigate the true nature of the stellar progenitor of W49B, we have extracted spectra from multiple regions of the SNR and measured the abundances of iron relative to oxygen. Our initial spectral analysis indicates that iron is overabundant relative to iron at each location of the SNR and thus an origin associated with the death of a white dwarf star appears to be more likely.

Project for SSE 399 – Research Methods. The instructors are Justice and Pannuti. The students involved are Haddix and Halter.

P = 65

G1.9+0.3 -- The supernova remnant, the legend - SSE 399 -- Research Methods

****John Haddix, *Jeremiah Halter, Drs. Thomas Pannuti and Jeannie Justice, Mentors, Department of Earth and Space Science, Department of Foundational and Graduate Studies in Education, College of Science, College of Education***

With an estimated age of 140 years, the supernova remnant (SNR) G1.9+0.3 is thought to be the youngest SNR within the Milky Way Galaxy. Through the use of the Chandra X-Ray Observatory and its archived data, an analysis of the emission from this object was conducted, coming to the conclusion that these emissions are of a synchrotron origin, as opposed to a plasmatic one. Standard non-thermal models, such as power laws and synchrotron “cut-off” models, were used to fit extracted spectra across the whole azimuth of the SNR. Such spatially-resolved spectral analysis allows us to search for spectral and spatial variations in the properties of the X-ray shell of emission, particularly from the bright eastern and western rims. We will present the initial results from fitting these spectra using the power law and synchrotron cut-off models.

P = 66

**PSR B1509-58: When the galaxy has a question - Project for SSE 399 --
Research Methods**

****Brandy Anderson, *Austin Howard, *Maggie Quesinberry, Drs. Thomas Pannuti and Jeannie Justice, Mentors, Department of Earth and Space Science, Department of Foundational and Graduate Studies in Education, College of Science, College of Education***

We have conducted a spectral analysis of an archival observation made of the Galactic pulsar wind nebula (PWN) PSR B1509-58 using the Chandra X-ray Observatory. This PWN is famous for its striking resemblance to an extended hand-like structure: its age and distance are estimated to be approximately 1700 years and 5 kiloparsecs, respectively. The combination of the rapid rotation of the neutron star and its ultra-strong magnetic field makes B1509-58 one of the most powerful electromagnetic generators in the Galaxy. Spectra were extracted from the bright "palm" (which is associated with the central neutron star of the PWN and its trailing wind structure) and the "fingers" using the Chandra Interactive Analysis of Observations (CIAO) software package and fit using the software package XSPEC.

P = 67

Extracting pollen, spores, and algae from paleocene and eocene sediments

Kristina Gardner, Dr. Jen O'Keefe, Mentor, Department of Earth and Space Science, College of Science

Pollen, spores, and algae, collectively called 'palynomorphs,' are critical to understanding and interpreting depositional environments recorded by and ages of sedimentary reservoir rocks where radiometric age dates are unavailable and calcareous fossils are scarce. This is done primarily using vertical distributions of palynomorphs through a process called 'biostratigraphy.' Recently, scientists in the U.S. Gulf Coast determined that the existing biostratigraphic zonations were not adequate, and a working group of palynologists was convened to address this issue. In very early stages of the work, it became clear that processing technique used to extract palynomorphs from sediments had a significant impact on the analytical results. A comparative study was begun, whereby 66 matched samples were processed at Morehead State University using an adaptation of the methodologies of O'Keefe and Eble (2012) and compared to results obtained from a commercial laboratory. This poster details the results of a selection of these samples processed at Morehead State University and describes processing challenges associated with them. Processing techniques used at Morehead State University allowed useful palynomorphs to be obtained from samples that were pre-oxidized and/or subject to pedogenesis, two processes known to adversely impact palynomorphs recovery.

P = 68

Analyzing thermal and non-thermal X-ray emission from the Galactic supernova remnant RCW 86

****Mikal Gibbs, Dr. Thomas Pannuti, Mentor, Department of Earth and Space Science, College of Science***

We present an analysis of two pointed observations made of the Galactic supernova remnant (SNR) RCW 86 with the Chandra X-ray Observatory. These two observations targeted the bright southwestern and northeastern rims of the SNR and the total exposure time of the two observations was 164 kiloseconds. RCW 86 is significant in that it is believed to be associated with a historical supernova observed in 185 A.D. There is still debate about the type of stellar progenitor that produced this SNR, whether the progenitor was a massive star or a white dwarf star in a binary system. To investigate the nature of the stellar progenitor of RCW 86, we are performing spatially-resolved spectroscopy of the X-ray emission from this remnant at different portions along the rims with the intent of measuring iron abundances relative to oxygen. We are also analyzing the non-thermal X-ray emission detected from RCW 86 that appears to be synchrotron radiation.

P - 69

Dietary supplement attitudes and behaviors in the personal training profession

***Allison Hull, Dr. Gina Gonzalez, Mentor, Department of Kinesiology, Health and Imaging Science, College of Science**

Dietary supplements are a growing multi-billion-dollar industry. Supplement usage is widespread, however, due to a lack of FDA regulation, there are concerns with the safety and efficacy of many dietary supplements. Personal trainers are in a position to educate the public on dietary supplements; however, it is unknown how they approach this topic personally and professionally. The purpose of this study was to better understand behaviors and attitudes of personal trainers with respect to dietary supplements. After an extensive literature review, an instrument was created to reflect personal trainers' behaviors and attitudes. The instrument was pilot tested on a small group of professionals then disseminated to a larger sample. Forty-two personal trainers completed the online survey (66.7% female and 33.3% male). When asked about personal and professional practices, 73% said they currently take supplements but 66% said they never or seldom recommend/prescribe them to clients. Reasons for behaviors and differences in attitudes and practices will be further discussed. This research is supported by an Undergraduate Research Fellowship provided by the Academic Honors Program.

P - 70

A comparison of internet vs. textbook based learning in physics

***Darren Brammel, Dr. Robert Boram, Mentor, Department of Mathematics and Physics, College of Science**

The 2015 Program for International Student Assessment concludes that the United States ranks 25th out of 60 countries participating in the Organization for Economic Cooperation and Development in science literacy, and 40th in math literacy. Meanwhile, a report from The Brookings institution out of Washington D.C. found that areas with higher literacy rates of Science, Technology, Engineering, and Mathematics (STEM) showed higher economic growth across multiple indicators. So, it is crucial that the U.S. become a leader in innovation. To investigate the reason for the U.S.'s inadequate performance, this paper will compare the learning differences between using the internet, and using the textbook, as a resource for solving problems in physics. Twenty-eight high school students participated in an ongoing study to determine which of the two resources provide the most beneficial learning experience. This was done by assessing the adequacy of the students' progress on two common physics problems by means of an analytic rubric. This presentation will provide an overview of the literature and methodology that led to the results obtained and the conclusions resulting from the data analysis. This research was done with the assistance of a high school in Kentucky.

P - 71

Psychological coping strategies of Chinese exchange students attending a university in Eastern Kentucky: A case study

***Jun Peng, Dr. Wilson Gonzalez-Espada, Mentor, Department of Mathematics and Physics, College of Science**

Each year, thousands of college students participate in student exchange experiences with international universities. Study abroad programs allow students to immerse themselves in a sociocultural context different from their own, usually in a language that is not the students' first-language. This learning process is expected to enhance cultural competence, promote intercultural sensitivity, and benefit personal and career development. However, when there are significant differences in culture between home and the host country, exchange students might face a rough transition period. The purpose of this study is to use a case study methodology and semi-structured interview data to describe the psychological experiences and challenges faced by 6-10 exchange students from China when studying at Morehead State University, a rural university in Eastern Kentucky. The students' responses will shed light on important psychological issues such as anxiety, stress, study habits, motivation, personality and coping strategies.

P - 72**The altered queens problem*****Marla Ferguson, Dr. Vivian Cyrus, Mentor, Department of Mathematics and Physics, College of Science**

Although chess and mathematics have been studied collaboratively in the past, it has usually involved obtaining a way to strategically place a set number of queen pieces on an $N \times N$ size chessboard so that no queen attacks another. The current, much less studied chess problem involves discovering the minimum number of queen pieces that can be placed on an $N \times N$ size chessboard so that every space on the board can be attacked. Chess boards from size 3×3 to 10×10 have been investigated. The use of dominating sets has been an important factor in this project. A dominating set is simply the "smallest set" of efficient queens to place, depending on what size board we are dealing with.

P - 73**Braille Band: A refreshable Braille wristwatch for the blind and visually impaired*****Rachel Crum, Dr. R. Duane Skaggs, Mentor, Department of Mathematics and Physics, College of Science**

Day-to-day tasks can pose great challenges for blind, visually impaired (BVI), and deaf-blind individuals. An assortment of devices called assistive technology has been developed to help users overcome barriers to independence and carry out their daily activities. Included in this assortment of technologies are wristwatches, many of which are simply analog watches constructed so that the position of the watch hands can be determined by touch. This presentation proposes a design for a vibrating, refreshable Braille wristwatch for BVI and deaf-blind users that utilizes mechanical solenoid actuators in place of the standard piezoelectric actuators. Part of this research was conducted during an internship at the Ames Research Center in Mountain View, California.

P - 74**Language coping strategies of Chinese exchange students attending a university in Eastern Kentucky: A case study*****+Shanshan Li, Dr. Wilson Gonzalez-Espada, Mentor, Department of Mathematics and Physics, College of Science**

Each year, thousands of college students participate in student exchange experiences with international universities. Study abroad programs allow students to immerse themselves in a sociocultural context different from their own, usually in a language that is not the students' first-language. This learning process is expected to enhance cultural competence, promote intercultural sensitivity, and benefit personal and career development. However, when there are significant differences in language between home and the host country, exchange students might face a rough transition period. The purpose of this study is to use a case study methodology and semi-structured interview data to describe the language experiences and challenges faced by 6-10 exchange students from China when studying at Morehead State University, a rural university in Eastern Kentucky. The students' responses will help higher education institutions better understand how exchange students improve their listening and reading comprehension, and their writing and speaking skills.

P - 75**The math behind "Who is number 1?"*****Gabe McIlrath, Dr. Chris Schroeder, Mentor, Department of Mathematics and Physics, College of Science**

Athletics have grown to become a large part of today's society. Whether you are a spectator or a participant, the biggest question on everyone's mind is, "Who is number one?" The route to determine the top competitor is not as simple as one may think. Using Linear Algebra in a process called "Markov Chains", we can formulate an overall ranking of the individuals in a pool of competition. Incorporating variables other than wins and losses will affect the accuracy of the rankings. How variables such as physical attributes can affect rankings is what will be shown.

P - 76

Enhancing nurse to nurse communication - NURB 361 Introduction to Nursing Research

**Kati Schuh, *Celena Wagner, *Nick Thompson, *Hannah Chitkara, *Kiristan Dials, Suzi White, Mentor, Department of Nursing, College of Science*

The objective of this project is to observe, analyze, and ascertain nurse to nurse communication methods within a large, teaching facility in an urban area and to propose recommendations to increase the effectiveness of nurse to nurse hand-off and nurse telecommunications for better patient outcomes. Improved communication techniques will ultimately lead to higher quality, holistic nursing care and therefore increase rates of patient safety and satisfaction. This will be completed by conducting nurse interviews encompassing questionnaires, observing nurse implementation, and analyzing hospital policy to uncover barriers to efficient communication.

P - 77

Comparison of human vs. technological identification of blood products - NURB 361 Introduction to Nursing Research

**Abbey Carruthers, *Gabrielle Dyer, *Sarah Holman, *Anne Lawson, *Jenna Litteral, Suzi White, Mentor, Department of Nursing, College of Science*

This study focuses on the comparison of human vs. technological identification of blood products in relation to patient safety. Blood transfusions have the most resemblance to an organ transplant that a nurse can perform without depending on physician assistance. Being a critical procedure that could save a life, minimizing reactions and preventing errors is essential to positive patient outcomes. The objective of this study is to analyze human and technological methods for identifying a blood product with the patient in need to encourage safer methods for blood administration with fewer transfusions reactions. We are using national recommendations versus blood transfusion protocols at a large, teaching hospital in an urban area to determine whether technology has surpassed human competencies in verifying blood type during administration. Overall, technology improves patient safety but does not substitute for human verification of the proper blood product.

P - 78

Evidence-based practice for soap and water handwashing project – NURB 361 Introduction to Nursing Research

**Brittany Carpenter, *Mikaela Buckler, *Natalie Thompson, *Carsey Campbell, *Shannon Morgan, Suzi White, Mentor, Department of Nursing, College of Science*

Hand hygiene is essential in preventing the spread of infectious microorganisms especially in a healthcare setting. Despite the major risks of healthcare associated infections, healthcare workers are washing their hands less than half of the times they should during their shift. Often in the hospital, hand sanitizer is chosen over soap and water due to convenience or other issues. Our research focuses on studies that have been conducted on the use of soap and water handwashing in the hospital. Our project aim is to illustrate the benefits of soap and water handwashing along with recommended implementations the hospital can use to improve compliance.

P - 79

**Recommendations for nursing staff education on the use of anticoagulants –
NURB 361 Introduction to Nursing Research**

****Gena Brumley, *Kayla Harless, *Madison Steele, *Clara Spriggs, *Kaitlin Williams, Suzi White, Mentor, Department of Nursing, College of Science***

Without proper staff education regarding the purpose of anticoagulation therapy, patients are placed at risk and overall outcomes are poor. The objective of the research is to improve nursing staff education on the use of inpatient anticoagulation therapy. Information was gathered from nurses employed at a large teaching facility in an urban area regarding their policy on anticoagulation therapy education. Nurses reported a lack of time and prophylactic use of anticoagulants as barriers for implementation of educational policies. Our recommendation is for nursing staff to utilize facility policies on patient education related to the use of anticoagulants to maximize patient outcomes.

P - 80

**Interprofessional collaboration to prevent hospital-acquired pneumonia –
NURB 361 Introduction to Nursing Research**

****Jessica Cooper, *Megan Mustard, *Amber Manning, *Morgan Miller, *Haleigh Pike, Suzi White, Mentor, Department of Nursing, College of Science***

In recent studies it has been proven that the use of oral hygiene, ambulation, turn, cough deep breathe, and adequate hydration are effective in the prevention of hospital acquired pneumonia (HAP). While preparing this project at a large teaching hospital the protocol to decrease and prevent the incidence of HAP was set through a guideline that is accessible to all medical personnel through the CPM Guidelines. These guidelines state to “promote preventative measures [e.g. ambulation/activity, cough and deep breathing, adequate hydration, hand hygiene, oral hygiene].” Through observation and interviewing nursing staff and administration, it was evident that the protocol was not being fully met as evidenced by the following: lack of communication between interdisciplinary teams of the responsibility of turning, oral hygiene, and ambulation care, and education of effective coughing and deep breathing. In recommendation to improve patient outcomes, the use of proper oral hygiene has been proven to be effective in the prevention of HAP. Through the hospital’s documentation system, a flag should appear in the patient’s chart to prompt nursing staff to perform oral hygiene every shift. Patient education should be provided on the importance of meticulous oral hygiene in order to prevent the incidence of HAP.

P - 81

**Improved patient outcomes through timely response to alarms – NURB 361
Introduction to Nursing Research**

****Saralyn Miller, *Natalie Morton, *Audrey Ramsey, *Kendra Roberts, *Brandi Stumbo, Suzi White, Mentor, Department of Nursing, College of Science***

One of the most common characteristics of the clinical environment is the seemingly ever-present variety of alarm sounds. These could indicate anything from a fall-risk patient out of bed to an IV infusion gone awry to a patient in a potentially fatal crisis. Unfortunately, many staff members have become desensitized to the urgency these alarms demand. We have selected the more specific classification of patient call lights to investigate. Extensive research has proven the effectiveness of these devices in improving patient outcomes, satisfaction, and safety. Over the past few months, we assessed response times of staff to alarms on our unit, identified reasons for delays, and devised recommendations to reduce response times to these alarms. It is important that these alarms are viewed as a crucial asset to best care and a vital tool to improving overall patient outcomes and satisfaction with care.

P = 82

**Preventing practice drift through appropriate patient identifiers – NURB 361
Introduction to Nursing Research**

****Shelby Doran, *Justin Gasser, *Sarah Hinson, *Whitney Lewis, *Courtney Wiley, Suzi White, Mentor, Department of Nursing, College of Science***

The concept of practice drift associated with patient identifiers is an ongoing issue in healthcare. The standard practice for correctly identifying patients involves the patient reciting two identifiers, such as full name, date of birth, or social security number. However, despite this standard, it is commonly noted that registered nurses use a work-around technique involving placing name bands on bedrails, patient barcodes on computers, and not asking the appropriate patient identifiers. This research aims to identify practice drift and work-around techniques with patient identifiers, and illustrate reasons why registered nurses are not utilizing proper patient identification.

P = 83

Flavor conditioning before and during acute withdrawal from amphetamine in rats

****Brianna K. Ward, Samuel L. Case, Terra E. Riggs, Drs. Hsun White and Wesley White, Mentors, Department of Psychology, College of Science***

The current study used a taste conditioning procedure to determine whether spontaneously occurring acute withdrawal from amphetamine included a negative internal state. Rats received a series of four tests that began at five-day intervals. At light onset of day 1 of a test, each rat was administered saline. Rats subsequently received 10-min access to a saccharin solution containing one flavor. Group 1 (N=4) received this access twelve hours after saline, and group 2 (N=4) received this access eighteen hours after saline. On day 3 of a test, the two groups of animals were treated similarly, except that they were administered 2.0 mg/kg amphetamine, and they had access to a second flavored solution. For each group, the flavors that followed saline or amphetamine were counterbalanced. A reduction in intake of the second flavor across tests would suggest that amphetamine was associated with a negative cue state. Intake of a flavor occurring twelve hours after amphetamine did not decrease across tests. Supported by NIH grant DA015351 and UG Fellowships.

P = 84

Some characteristics of acute withdrawal from nicotine in rats

****Terra E. Riggs, Brianna K. Ward, Samuel L. Case, Drs. Hsun White and Wesley White, Mentors, Department of Psychology, College of Science***

The current study examined whether nicotine produced a sign of acute withdrawal and whether acute withdrawal from nicotine resulted from a disruption in dopamine signaling. Different groups of rats received a series of 5-day tests. At light onset of test day 1, animals received a control treatment, and at light onset of test day 3 they received an experimental treatment. Experimental treatments included different doses of nicotine followed 30 minutes later by saline or a dopamine D1 receptor antagonist. Following treatments, animals were placed in individual open fields, and activity was monitored for the next 24 hours. As nicotine dose increased, subjects were more likely to have reduced activity 12-24 hours after treatment, a sign of acute withdrawal. At a moderate nicotine dose, some animals showed acute withdrawal, whereas others did not. D1 antagonist appeared to prevent acute withdrawal in at least some of the animals showing acute withdrawal in response to the moderate nicotine dose. Acute withdrawal from nicotine shares some features with acute withdrawal from amphetamine and morphine, but it also appears to have some unique features. Supported by NIH grant DA015351 and UG fellowships.

P - 85

Withdrawal from chronic morphine impairs learning and motivation

****Jason T. McClurg, Brianna K. Ward, Christopher Hobert, Rachel Hudson, Dr. Ilsun White, Mentor, Department of Psychology, College of Science***

Morphine is a highly addictive narcotic, which is used to treat pain. Previously, we have shown that morphine decreased activity and eating about 20-24 hour after injection. The present study examined behavioral effects on learning and motivation, following withdrawal from chronic morphine injection. Male Wistar rats were trained to press a lever for a food pellet (45 mg) and were assigned randomly to two groups. One group received a moderate dose of morphine (5mg/kg) for 5 consecutive days (subchronic). Another group received saline injections for 5 days. On withdrawal days 1-5, rats were trained on a FR-20, which required 20 lever-presses for a pellet. During short-term and longer-term withdrawal phase, morphine-treated rats showed a longer latency to press the lever and showed greater difficulty completing the task, compared to saline-treated controls. Our data suggest that subchronic use of moderate dose of morphine leads to deficits in learning and motivation. Our data is consistent with negative effects experienced in humans going through withdrawal symptoms associated with opioid addiction.

P - 86

Parental depression: Connections with narrative coherence and criticism in discussions of their adolescents

****Rayven Howard, *Amber Justice, *Haley Lowe, Megan Conn, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science***

Depression amongst parents has been found to have a wide-ranging negative impact on children, including emotional, behavioral, and cognitive development. Lack of sensitivity in observed parent-child interactions is thought to be a primary reason for such outcomes; however, less is known about how depressed parents think about their children. This study explores the association between parent's depressive symptoms and their thought patterns when describing their teens. Twenty-one families participated when their children were 12 years of age and again 5 years subsequent. Approximately half the children were female. Parental depression was assessed using the CES-Depression Scale (Radloff, 1977). The Five-Minute Speech Sample (FMSS: Magana-Amato 1993) assessed the parents' understanding of their teen. Both measures were utilized at each time point. Following guidelines by Sher-Censor et al., 2013, FMSS transcripts were coded for positive and critical remarks, as well as for overall narrative coherence. The authors hypothesize that higher parental depression scores will be positively associated with critical statements about their teen, and will be negatively associated with coherence and positive remarks. This research was supported by an MSU Graduate Assistantship and by MSU RCPC and KY NSF grants.

P - 87

Emotion regulation in relation to attachment strategy: Working backwards

****Tesla M. Henderson, James N. Gutierrez, Nick A. Dawson, Kaitlyn B. Wilson, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science***

Recent studies have linked attachment strategy to emotion understanding and regulation, which serve a critical foundation in children's development. Amongst securely attached dyads, parents communicate openly about feelings and have an attitude that all feelings are useful and should be accepted, which contrasts markedly with patterns found for insecure dyads. The current study involves a longitudinal design with a novel, semi-structured emotions interview. Attachment was assessed via the Strange Situation separation-reunion procedure at age 4. Twenty-one 16 to 18 year olds (9 female) were interviewed about their experiences with sadness and anger. The authors are finalizing a sorting of the interviews by their qualitative similarities and differences in both observable behavior and content. Compared with the other groups, teens with high awareness and expression of negative affect, combined with adaptive coping and regulation, are hypothesized to have had secure/low-risk attachment strategies when they were preschoolers. Teens with low awareness, acceptance, and communication of emotions, are expected to be insecurely attached. These results likely will contribute meaningfully to the field's understanding of the development of emotional-behavioral difficulties among children and adolescents. This research was supported by MSU RCPC and KY NSF grants.

P = 88

Mindfulness and its association with emotional regulation in adolescence

****James N. Gutierrez, Tesla M. Henderson, Nick A. Dawson, Kaitlyn B. Wilson, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science***

Mindfulness is a state of openness, acceptance, and awareness in which aversive thoughts and feelings have less of an impact on an individual. Modern cognitive-behavioral therapies, including Acceptance and Commitment Therapy, utilize mindfulness techniques to enhance this mental state, leading to improvements in the regulation of negative affect and, thereby decreasing symptoms. The current study examines the association of trait-based mindfulness (i.e., an individual's tendency to be mindful) and adolescent's patterns of regulating sadness and anger. Twenty-one 16 to 18 year olds (9 female) were interviewed about their emotional experiences. The authors are finalizing a sorting of the interviews by their qualitative similarities and differences in both observable behavior and content. Compared with the other groups, teens with high awareness and expression of negative affect, combined with adaptive coping and regulation, are predicted to have self-report questionnaire scores showing: a) the highest trait-based mindfulness; b) the lowest emotion dysregulation; and c) the lowest avoidance of emotions. These results appear likely to have important implications for understanding troubled adolescents. This research was supported by an MSU Undergraduate Research Fellowship and by MSU RCPC and KY NSF grants.

P = 89

Attachment in early adolescence in association with representations of relationships five years later

****Angelica Miracle, Kady Chaffin, Marissa Childers, Cara Naylor, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science***

Attachment theory has become one of the most influential approaches to understanding social development. Attachment to parents, whether secure or insecure, is expected to generalize to relationships with others based on our expectations (i.e., internal working models). That is, we learn whether we can expect others to be emotionally supportive based on these earliest relationships. The present study was part of a larger longitudinal project involving 21 families living in Eastern Kentucky. Attachment was assessed at age 12 via the School Age Assessment of Attachment (SAA: Crittenden, 2005), a projective story-telling task. Relationship quality was measured approximately five years later. This involved a questionnaire, the Experiences in Close Relationships—Revised (ECR-RS; Fraley, Waller, & Brennan, 2000), which asks individuals the same 10 questions about their relationships with their mother, father, best friend, and romantic partner. The authors hypothesize that teens' attachment strategies will be associated with levels of trust and comfort in their subsequent relationships. This research was supported by MSU RCPC and KY NSF grants.

P = 90

How maternal childhood trauma is related to parenting sensitivity to infant emotional cues

****Ashley Hamm, Madison Raymer, Dr. Shari Kidwell and Francis Merritt, MSN, Mentors, Department of Psychology, College of Science, St. Claire Regional Medical Center***

Childhood trauma can have a major deleterious impact on individuals, and data is accumulating that suggests this likely creates risk for future offspring. Specifically, parents with higher exposure to childhood trauma have been found to have increased likelihood of frightened, frightening, and dissociated behavior in interactions with their children, as well greater child protection involvement. Increased sensitivity to infant emotional cues, in contrast, may decrease the likelihood of transmitting intergenerational risk. In this pilot study, three expectant/new mothers were given a series of questionnaires, two being specific to trauma: the PTSD Checklist and Adverse Childhood Experiences (ACEs). These mothers had followed through on a referral by their nurse midwife for early intervention services. The mothers' sensitivity to her baby was evaluated using the CARE-Index (Crittenden, 1981), a three-minute play task. Babies ranged between 6 weeks and 4 months. The hypothesis is that mothers reporting greater childhood trauma and traumatic symptoms on the questionnaires will have lower sensitivity to their infant's emotional cues. These associations will be explored via qualitative analyses. This work was supported by MSU Undergraduate Research Fellowships and an MSU AHRC grant.

P - 91

Maternal insight and dyadic synchrony

***Madison Raymer, Ashley Hamm, Dr. Shari Kidwell and Francis Meritt, MSN, Mentors, Department of Psychology, College of Science, St. Claire Regional Medical Center**

Research has demonstrated that mother's ability to think insightfully about themselves and their babies are associated with a wide range of child psychosocial outcomes. Although several measures have been utilized to assess insightfulness, all utilize detailed structured interviews. The Working Model of the Child Interview (WMCI; Zeanah et al., 1994), used in the current study, has been associated with infant attachment, dyadic interactional quality, and maternal mental health. The WMCI explores the "meaning" a baby has to his or her parent by asking about perceptions of the relationship, the child, and parenting experiences. In this pilot study, the WMCI was administered to three expectant/new mothers to assess mental representations of their babies. These mothers had followed through on a referral by their nurse midwife for early intervention services. The quality of dyadic synchronous interaction, the mothers' sensitivity to her baby, and the baby's cooperativeness during play was evaluated using the CARE-Index (Crittenden, 1981). Babies ranged between 6 weeks and 4 months. The hypothesis is that mothers with balanced, insightful representations will be more sensitive and will have more harmonious interactions with their infants. These associations will be explored via qualitative analyses. This work was supported by MSU Undergraduate Research Fellowships and an MSU AHRC grant.

P - 92

Pilot study: Effects of mandala coloring on long-term stress reduction

****Vanessa L. Tirabassi, +Brittney A. Monn, +Hunter R. Gatewood, +Isabella R. Gearhart, +Mary J. Blanton, Dr. Todd Smith, Mentor, Department of Psychology, College of Science**

Mandala coloring has become a mainstream source of stress reduction in the adult population. Very little empirical evidence has been collected to verify whether or not the coloring causes a significant amount of stress reduction. Previous research has looked at the effects of mandala coloring used to reduce lab-created stress (Curry & Kasser, 2005; Van der Venet & Serice, 2012). This research question looks at the long-term effects of mandala coloring stress reduction on the college students' normal day-to-day stress, accounting for both positive and negative stressors that will occur during the five-week course. We hypothesize that the mandala coloring experimental group and a mindful-based experimental group will exhibit stress reduction, with the mandala coloring group displaying greater significance in stress reduction.

P - 93

The influence of scale characteristics on the latency to make a rating

***Zoe Becerra, Jordan Crowe, Dr. Gregory Corso, Mentor, Department of Psychology, College of Science**

In previous studies, a non-linear relationship between the latencies to make a rating and the rated level of complexity was found. However, by decreasing the number of rating categories from five to three, participants made quicker ratings. The present study investigated other factors that could contribute to the non-linear results found initially. We predicted that the overall range of the scale and the size of the interval between rating categories would affect the latency to make a rating. The task was to rate the complexity of different roadway scenes. Three different rating scales (A, B, and C), each with three indicators for complexity, were used. The rating scale was a between-participant factor and the scale indicators for complexity were within-participant factors. Scale A was labeled, 1, 10, and 20, scale B was labeled 1, 50, and 100, and scale C was labeled 1, 100, and 200. For all scales, 1 designated a rating of low complexity. Each roadway scene (N=100) was presented six times for 600 ratings per participant. The mean latency by complexity ratings from each scale were compared. Using a repeated measures ANOVA there were no significant main effects or interactions among the latencies using the different scales.

P - 94

2017 Regional brain awareness program: High school visits

***+Joseph Reese, Dr. Ilun White, Mentor, Department of Psychology, College of Science**

High school visits are a year-round program. Each year, our target goal is to reach 1500 students in our Eastern Kentucky region, visiting 10-11 high schools. The goal of these visits is to promote brain health through lectures on 'drugs effects on the brain and behavior', in addition to distribution of educational material relevant to brain health. The lectures include descriptions of how alcohol and other addictive drugs affect the brain and behavior. We also present our research data from the animal and human research obtained from the Neuroscience laboratory, Psychology Department, Morehead State University. The high school students are invited to ask questions, allowing them to engage in active participation in discussion about drug effects on the brain and behavior.

P - 95

Identifying risk in a play task: Application of the Dynamic Maturation Model of attachment and adaptation

***+Michelle Deaton, +Whitney Ramos, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science**

Although there is considerable research showing that attachment is meaningfully related to parenting and developmental risk, it is typically measured in a resource-intensive way that is not available to most clinicians. The gold-standard method is a 25-minute standardized separation and reunion procedure (Strange Situation: Ainsworth et al., 1978), which is videotaped and coded by highly-trained observers. The present study hypothesized that signifiers of attachment strategy and parenting sensitivity would also be evident in a play task. Fifty-four families completed the Strange Situation when children were 4 years of age, coded using Crittenden's preschool method (2004). Dyads also played a game of ring toss, which was coded for sensitivity and non-hostility using The Emotional Availability Scale, 3rd Edition's (Biringen, 2000). Children who displayed secure attachment with their caregiver during the mildly stressful Strange Situation tended to have the most sensitive and least hostile parents. Additional analyses are being conducted based on qualitative differences amongst dyads in the ring toss task. These findings will have implications for clinicians working with young children. This research was supported by MSU Graduate Assistantships and by MSU RCPC and KY NSF grants.

2016-2017

Recipients of Undergraduate Research Fellowships

Morehead State University supports the initiative for students to engage in research, scholarship, performance activities and creative works. Listed below are the 2016-2017 awardees and their mentors.

COLLEGE OF BUSINESS AND TECHNOLOGY

Student URF	Class	Department	Mentor (s)
Adolfo Enrique Samudio Cano*	GR	DETM	Jorge Ortega-Moody
Michael Edlin*	JR	DETM	Jorge Ortega-Moody
Cody Garcia*	JR	DETM	Nilesh Joshi
Chase Schell	JR	DETM	Sanghyun Lee
Adam Stanley*	SR	DETM	Sanghyun Lee
Kaleb Toller*	SR	DETM	Jorge Ortega-Moody
Jordan Bach*	SR	SBA	Janet Ratliff
Nathan Blevins*	SR	SBA	Michael Harford
Benjamin Cain	JR	SBA	Johnathan Nelson Sister Judi Lambert** Mark Neff**
Tyler Davis	SR	SBA	Steve Chen
Sydney Gebka*	SR	SBA	Johnathan Nelson
Merideth Jewell	SO	SBA	Kenneth Henderson Steve Chen
Bailee Pennington*	JR	SBA	Sarah Garven
William Razor	JR	SPMG	Michael Hail
Sarah Fink	FR	SPMG	Michael Hail

CAUDILL COLLEGE OF HUMANITIES

Student URF	Class	Department	Mentor (s)
Stephanie Bauman*	JR	A&D	Joy Gritton
Kristin Busby*	SR	A&D	Jennifer Reis
Waylan Coffey	SR	A&D	Robyn Moore
Adam Davis	SR	A&D	Jennifer Reis
Marilyn Holmes*	SR	A&D	Elizabeth Mesa-Gaido
Michael Hutchinson*	SR	A&D	Jennifer Reis
Simon Maness	JR	A&D	Elizabeth Mesa-Gaido
Faith McNabb*	JR	A&D	Joy Gritton
Sarah Morgan*	SO	A&D	Joy Gritton
Anna Nichols*	JR	A&D	Joy Gritton
Kyle Smith*	SR	A&D	Joy Gritton
Amina Anwar*	SO	CML	Philip Krummrich
Sydney Cook*	SO	CML	Philip Krummrich
Jeffery Couch*	SR	CML	Philip Krummrich
Hannah Day	FR	CML	Donnell Murray
Joseph Finley*	JR	CML	Donnell Murray
Jessica Hall*	JR	CML	Pilip Krummrich
Lin Huang	SO	CML	Ann Andaloro

Silvia Milantoni	SO	CML	Ann Andalaro
Elizabeth Von Mann*	SO	CML	Philip Krummrich
Madison Wallace*	JR	CML	Morgan Getchell
Cailin Wile*	SR	CML	Philip Krummrich
Kathrine Wilkerson	SR	CML	Ann Andalaro
Natalie Young*	SR	CML	Philip Krummrich
Erica Brooke Blair*	SR	HPIL	Gregory McBrayer
Jonathan Dean*	SO	HPIL	Alana Scott
Max Prowant*	JR	HPIL	Jonathan Pidluzny
Henry Quillen*	SR	HPIL	Gregory McBrayer
Jeffrey Tyler Syck*	SR	HPIL	Jonathan Pidluzny
Brandon Lindsey	SR	KCTM	Jesse Wells
Andrew Preston	SR	KCTM	Jesse Wells
Morgan Bauer*	SR	MThD	Octavia Biggs-Fleck
Aaron Blevins	SR	MThD	Brian Mason
Morgan Casto*	SR	MThD	Greg Carlisle
Katie Dennis*	SR	MThD	Denise Watkins
Olivia Foster	GR	MThD	Denise Watkins
Timothy Johnson*	SR	MThD	David Oyen
Darren Proctor*	SR	MThD	Brian Mason
John Tyree	SR	MThD	Brian Mason
Gloria Yehilevsky*	SR	MThD	Brian Mason
Mathew Belcher*	JR	SSWC	Elizabeth Perkins
Ivan Benitez*	SR	SSWC	Rebecca Katz
Austin Curnutte	JR	SSWC	Bernadette Barton
Albina Laskovtsov*	SR	SSWC	Bernadette Barton/ Rebecca Katz
Amber Lawson*	SR	SSWC	Bernadette Barton
Kevin Shankle*	SR	SSWC	Elizabeth Perkins

College of Education

Student	URF	Class	Department	Mentor (s)
Kaitlyn Bugg		SO	ECESE	Kim Nettleton
Sarah Eades*		SR	ECESE	Kim Nettleton
Jessica King		SR	ECESE	Mee-Ryoung Shon
Caitlyn Mullins		SO	ECESE	Sarah Hawkins-Lear
Lauren Myre*		SO	ECESE	Sarah Hawkins-Lear
Holly Wells		GR	ECESE	Sara Hawkins-Lear
Bryana Shumate		JR	FGSE	Tim Simpson
Justin Elswick*		JR	MGSE	Lesia Lennex

College of Science

Student	URF	Class	Department	Mentor (s)
Emery Clark*		SR	AGR	Patricia Harrelson
Linda Johnson		SR	AGR	Sara Malone
Taylor Saunders*		SO	AGR	C. Brent Rogers
Lisa Seim*		JR	AGR	Flint Harrelson
Katlyn Vencil*		SR	AGR	Patricia Harrelson
Lauren Zembrodt		SR	AGR	Sara Malone
Jesseca Dale*		SO	BIOC	Allen Risk
Allison Higgins		SR	BIOC	Chris Cottingham

Kendall McDonald*	SR	BIOC	Allen Risk
Maggie Pollitt*	SR	BIOC	Kurt Gibbs
Linzi Watson*	SR	BIOC	Kurt Gibbs
John Curnutte	SR	ESS	Benjamin Malphrus
Sonny Ernst*	SO	ESS	Thomas Pannuti
Jonathan Eisenhour	JR	ESS	Jen O'Keefe/Steve Reid
Timothy Huffman*	FR	ESS	Dirk Grupe
Cadence Payne*	SR	ESS	Thomas Pannuti
Sarah Wilczewski	SR	ESS	Benjamin Malphrus
Joanna Guerrant	SR	KHIS	Gina Gonzalez
Allison Hull*	SO	KHIS	Gina Gonzalez
Joshua Allen*	SR	MAPH	Ignacio Birriel
James Blackburn	SR	MAPH	Jennifer Birriel
Joshua Fugate	JR	MAPH	Wilson Gonzalez-Espada
James Hankins	JR	MAPH	Jennifer Birriel
Matthew Hezseltine	FR	MAPH	Kent Price
Robert Holbrook	JR	MAPH	Jennifer Birriel
Damon King	SR	MAPH	Jennifer Birriel
Kristyan Longo	FR	MAPH	Kent Price
Ian Ray	SR	MAPH	Jennifer Birriel
Marissa Walls	JR	MAPH	Jennifer Birriel
Stephen Alley	SR	PSY	Gregory Corso
Rebecca Ashley*	SR	PSY	John Blackledge
Zoe Becerra*	SR	PSY	Gregory Corso
Adam Bocook*	SR	PSY	Gregory Corso
Brandi Carey	SO	PSY	Ilsun White/ Wesley White
Samuel Case*	FR	PSY	Samuel Case
Nicholas Dawson*	SR	PSY	Tim Thornberry
James Nathaniel Guitierrez*	JR	PSY	Shari Kidwell
Ashley Hamm*	SR	PSY	Shari Kidwell
Hannah Howard	SR	PSY	Ilsun White
Rachel Hudson*	SO	PSY	Ilsun White
Madison Raymer*	JR	PSY	Shari Kidwell
Terra Riggs*	SR	PSY	Ilsun White/ Wesley White
Brianna Ward*	FR	PSY	Ilsun White/ Wesley White
Taylor Zumwalt*	SR	PSY	Tim Thornberry

Office of Academic Programs

Student URF	Class	Department	Mentor (s)
Katlyn Hanes*	SR	OAP	Laurie Couch

*presenting at the 2017 Celebration of Student Scholarship

**from St Claire Medical Center

Student Index

Adams-Garcia, Itzel	27
Akers, Eddi	50
Allen, Joshua	16
Anderson, Brandy	51
Anwar, Amina	31
Applegate, Dillon	17
Ashley, Rebecca	22
Bach, Jordan	3, 38
Bailey, Cassidy	15
Bamberger, Katie	24
Bauer, Morgan	10
Bauman, Stephanie	7
Beard, Cullen	3, 35
Becerra, Zoe	17, 59
Belcher, Matthew	3, 37
Benitez, Ivan	36
Black, Morgan	15
Blair, Brooke	13
Blanton, Mary	59
Blevins, Andrew	37
Blevins, Nathan	39
Bocook, Adam	21
Brammel, Darren	52
Brashear, Kevin	17
Brown, Rachel	46, 49
Brumley, Gena	55
Bryan, Gregory	12
Buckler, Joy	41
Buckler, Mikaela	54
Burchett, Kisha	38
Busby, Kristin	7
Campbell, Carsey	54
Carpenter, Brittany	54
Carruthers, Abbey	54
Case, Samuel	56
Castle, Joe	33
Caudill, Jennifer	42
Chaffin, Kady	58
Chandler, Hunter	18
Chaney, Rachel	43
Charles, Marymargret	42
Childers, Marissa	58
Childs, Lindsay	40
Chitkara, Hannah	54
Cissell, Madison	35
Clark, Emery	44

Clark, Katie	42
Clayton, Lexie	43
Conley, Hannah	46
Conn, Megan	57
Cook, Sydney	31
Cooper, Jessica	55
Coots, Zachary	33
Couch, Jeffery	32
Cravens, Dane	18
Creech, Colby	41
Creech, Zachary	14
Crouch, Torianne	33
Crowe, Jordan	59
Crowe, Shelbie	3, 43
Crum, Rachel	46, 49, 53
Dale, Jesseca	47
Daugherty, Sean	35
Dawson, Nick	20, 57, 58
Day, Hannah	8
Dean, Jonathan	13
Deaton, Michelle	60
Dennis, Katie	3, 10
Dials, Kristan	54
Doran, Shelby	56
Dorn, Johnna	29
Dyer, Gabrielle	54
Eades, Sarah	41
Eden, Grace	35
Edlin, Michael	3, 25, 26, 40, 41
Edmonds, Zachary	24
Elswick, Justin	3, 43
Ernst, Sonny	16
Eskridge, Jessica	47
Ferguson, Marla	53
Finley, Josphe	8
Fisher, Rachel	10
Flint, McKinley	37
Fugate, Lindscy	41
Fultz, Crystal	28
Garcia, Cody	25
Garcia, Damaris	26
Gardner, Kristina	51
Gasser, Justin	56
Gatewood, Hunter	59
Gearhart, Isabella	59
Gebka, Sydney	3, 25

Gibbs, Mikal	51
Griffitts, Katherine	12, 33
Grothaus, Mitchell	35
Gullett, Clayton	15
Gutierrez, James	57, 58
Haddix, John	50
Hall, Jessica	32
Halter, Jeremiah	28, 50
Hamm, Ashley	58, 59
Hanes, Katelyn	20
Harless, Kayla	55
Hart, Zebulon	36
Hauck, Sierra	15
Henderson, Tesla	22, 57, 58
Hinson, Sarah	56
Hobert, Christopher	57
Hogg, Casey	41
Holman, Sarah	54
Holmes, Marilyn	31
Howard, Austin	51
Howard, Rayven	57
Hudson, Rachel	56
Huesman, Rachel	42
Huffman, Timothy	16
Hull, Allison	3, 52
Hunt, Taylor	21, 30
Hutchinson, Michael	7
Jett, Tucker	37, 50
Jetter, Alex	35
Johnson, Iris	18
Johnson, Timothy Blake	11, 34
Jones, Abby	45
Jones, Garret	36
Justice, Amber	57
Kessinger, Nicholas	44
Knox, Anna	45
Laskovtsov, Albina	3, 12, 36
Lawson, Anne	54
Lawson, Amber	3, 12
Lewis, Whitney	56
Li, Shanshan	53
Litteral, Jenna	54
Long, Erin	34
Lowe, Haley	57
Manning, Amber	55
Matthews, Hunter	44

McClurg, Jason	57
McDonald, Kendall.....	23
McGuffey, Kayla	24
McLlath, Gabe.....	53
McInteer, Samantha	35
McNabb, Faith	6
Messer, Megan.....	43
Miller, Morgan.....	55
Miller, Saralyn	55
Miracle, Angelica.....	58
Monn, Brittney.....	59
Moore, Brittany.....	42
Morgan, Sarah.....	6
Morgan, Shannon.....	54
Morton, Natalie	55
Mudiki, Saihiranmitra.....	26, 39
Murray, Donell.....	8, 28
Mustard, Megan	55
Myre, Lauren.....	44
Nash, Stephen	23
Naylor, Cara.....	58
Nichols, Anna	6
Ogletree, Mckensey	42
Oldfield, Leah	42
Oyeniran, Oluwafemi.....	39
Pang, Xiaotong (Victoria).....	39
Payne, Cadence.....	14
Peng, Jun	52
Pennington, Bailee	38
Peters, Faith.....	46
Peterson, Megan.....	49
Pike, Haleigh.....	55
Pollitt, Maggie.....	48
Price, Shelby	19, 56
Prince, Jasmine	47
Proctor, Darren.....	11
Prowant, Max	8, 9, 29
Quesinberry, Maggie.....	51
Quillen, Henry.....	12
Ramos, Whitney.....	60
Ramsey, Audrey.....	55
Ratliff, Katlin	41
Ray, Taylor	50
Raymer, Madison.....	58, 59
Reese, Joseph	60
Richards, Brandon.....	28

Richmond, Josh.....	37
Riggs, Terra.....	3, 21, 56
Roberts, Blaine.....	34
Roberts, Kendra.....	55
Rose, Brittany.....	23
Rowlett, Robert.....	40
Samudio Cano, Adolfo Enrique.....	25, 26, 40, 41
Saunders, Taylor.....	45
Schneider, Joseph Cramer.....	48
Schuh, Kati.....	54
Seim, Lisa.....	44
Shankle, Kevin.....	3
Shear, Lillian.....	18
Shu, Linya.....	39
Shuba, Katie.....	22
Smith, Hannah.....	21
Smith, Kyle.....	31
Spriggs, Clara.....	55
Stanley, Adam.....	3, 40
Steele, Madison.....	55
Stumbo, Brandi.....	55
Sweeney, Carissa.....	50
Syck, Taryn.....	33
Syck, Tyler.....	8, 9, 29
Thompson, Natalie.....	54
Thompson, Nick.....	54
Tirabassi, Vanessa.....	59
Toller, Kaleb.....	3, 25, 26, 40, 41
Tucker, Cassondra.....	59
Tucker, Mackenzie.....	37
Turner, Seth.....	49
Vencill, Katlyn.....	44
Vermillion, Alex.....	36
Vermillion, Rebekah.....	35
Von Mann, Elizabeth.....	31
Wagner, Celena.....	54
Wallace, Madison.....	32
Ward, Brianna.....	19, 56, 57
Ward, Holly.....	46
Watson, Linzi.....	48
Wheeler, Kaitlyn.....	44
White, Zackary.....	19
Wile, Cailin.....	31
Wiley, Courtney.....	56
Williams, Kaitlin.....	55
Wilson, Kaitlyn.....	22, 57, 58

Yehilevsky, Gloria	11
Young, Natalic	32
Young, Sarah.....	20
Zumwalt, Taylor	21



MSU is an affirmative action, equal opportunity, educational institution

GRADUATE SCHOOL MAJOR IN YOUR SUCCESS.



Expand your knowledge and explore new opportunities by enrolling in a graduate program at Morehead State. Your bachelor's degree put you on the path to success. MSU's Graduate School is the next step.

MSU offers 75 graduate programs, 41 graduate-level, non-degree programs, an education specialist degree available in five specialty areas, and a doctorate in education (Ed.D.). These programs offer the academic rigor and tools that you will need to get ahead in your current career, or to forge a new path.

Visit www.moreheadstate.edu/gradschool to learn about MSU's more than 30 graduate programs offered completely online.

You may earn your master's degree in as little as one year. MSU's one-year programs include:

- Master of Arts – Adult & Higher Education
- Master of Science – Career & Technical Education (Agriculture)
- Master of Arts – Communication
- Master of Arts – Wellness Promotion
- Master of Business Administration
- Master of Music – Music Performance
- Master of Music – Music Education

MSU's Graduate School is committed to personalized attention through small class sizes and one-on-one instruction by our expert and engaging faculty.

The Graduate School Advising Center offers professional advising staff to guide you toward your academic goals. Please contact the Graduate Advising Center Coordinator for more information at **606-783-2315**.

GRADUATE ASSISTANTSHIPS

MSU offers 90 graduate assistantships every year. You could contribute to the teaching, research, creative and service efforts of the University while earning a \$10,000 stipend. Learn more at www.moreheadstate.edu/gradschool.

VALUE

MSU's graduate tuition rate is the same, no matter where you live, or whether you are taking classes online or on campus. Learn more at www.moreheadstate.edu/tuition.

EARLY GRADUATE SCHOOL

You can get a head start on your post-secondary education if you are a current MSU student through our Early Graduate School. You can complete up to 12 graduate hours concurrently with your undergraduate courses while paying the standard undergraduate MSU tuition rate. To be eligible, you must have completed 90 credit hours with a cumulative GPA of 3.0 or higher. Visit www.moreheadstate.edu/gradschool for more information or to apply. The graduate dean and the representative for your program of choice must approve admission to Early Graduate School. Admission requirements may vary by academic program. Early Graduate School students are not eligible for graduate assistantships.

www.moreheadstate.edu/gradschool

Morehead State offers more than 75 graduate programs, plus nearly 41 graduate level non-degree programs, the education specialist degree available in five specialty areas, and a doctorate in education (Ed.D), all carefully designed to provide you with the tools to succeed in your career and become a leader in your field.

GRADUATE PROGRAMS AT MSU:

Doctorate (Ed.D.) in Education

- **Adult & Higher Ed**
- **P-12 Administrative Leadership**
- **Education Technology Leadership**

Master of Arts in Adult and Higher Education*

Master of Arts in Art

- Art Education
- Graphic Design
- Studio Art

Master of Arts in Communication

Master of Arts in Counseling*

Master of Arts in Education

- **Educational Technology**

Master of Arts in Education - Teacher Leader

- Alternate Area
- Biology
- Business and Marketing Content
- Business and Marketing Technology
- English
- Gifted Education
- Health and Physical Education
- IECE Non-IECE Certification Option
- Interdisciplinary P-5 Specialization
- Mathematics
- Middle Grades
- Literacy Specialist
- School Community Leader National Board Certification
- School Community Leader Non-National Board Certification
- Social Studies
- Special Education
- Fifth Year

Master of Arts in English

Master of Arts in Wellness Promotion*

Master of Arts in Sport Management

Master of Arts in Sociology

- **General Sociology**
- **Criminology**
- **Chemical Dependency Certification**
- **Interdisciplinary Social Sciences**

Master of Arts in Teaching

- Interdisciplinary Early Childhood Education (IECE)
- Middle Grades (5-9)
- Secondary

Master of Business Administration*

- **Health Systems Management Track**

Master of Music*

- **Music Education***
- Music Performance*

Master of Public Administration

Master of Science in Biology

- Regional Analysis and Public Policy

Master of Science in Career and Technical Education

- **Agriculture***
- **Industrial Education/Technology**
- **Career & Technical Ed Principal**

Master of Science in Engineering and Technology Management

Master of Science in Nursing

Master of Science in Psychology

- Clinical

Master of Science in Space Systems

Engineering

Rank I Program

- **Career/Technical Education**
- **Agriculture**
- **Industrial Education/Technology**
- Counseling
- **Educational Technology**
- Environmental Ed Endorsement
- General Pedagogy
- Gifted Endorsement
- Literary Specialist Endorsement
- TESOL

Education Specialist Degree

- Curriculum and Instruction
- **Adult and Higher Education**
- Counseling
- Instructional Leadership
- Director of Pupil Personnel
- Supervisor of Instruction
- Principal

Certificate Programs

- **Director of Special Education**
- Endorsement in Environmental Education
- **English as a Second Language Endorsement**
- **Health Systems Leadership Certification**
- **Health Systems Management Certification**
- **Instructional Computer Technology**
- Learning & Behavior Disorders P-12
- Moderate & Severe Disabilities P-12
- Superintendent
- Teacher Leader - Fifth Year

Online programs are listed in **gold**.

*Indicates one-year programs.

For additional information, contact:

Graduate School

Morehead State University

701 Ginger Hall

Morehead, KY 40351

606-783-2039

Fax: 606-783-5061

graduate@moreheadstate.edu



**MOREHEAD STATE
UNIVERSITY**

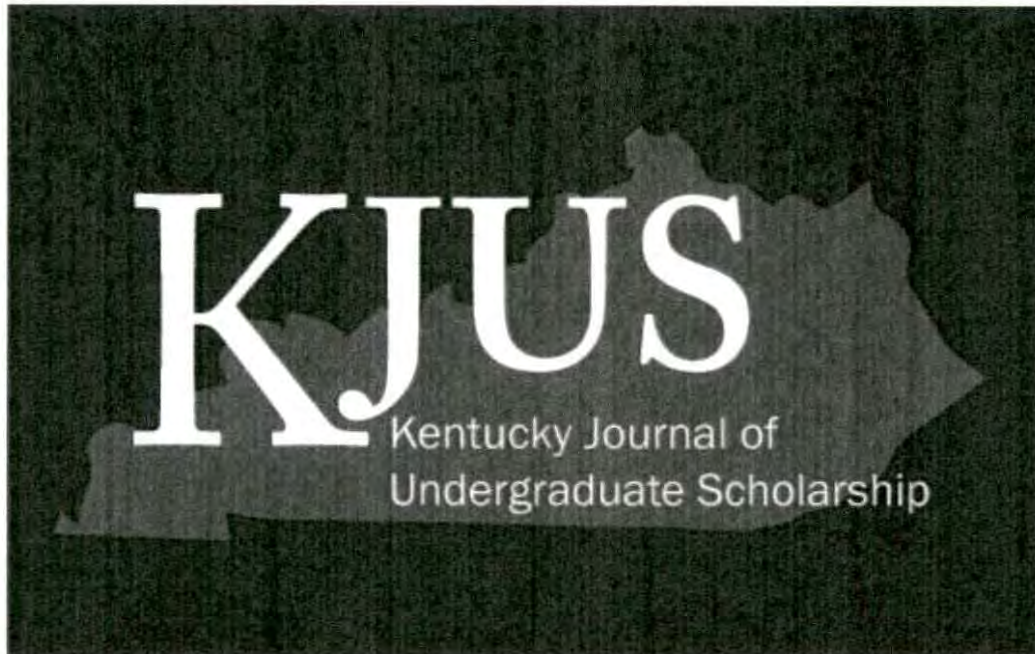
MAJOR IN YOU.

www.moreheadstate.edu/gradschool

Like us on Facebook: www.facebook.com/msugradschool

Follow us on Twitter: @MSU_gradschool

So, you just finished a big project this semester.
Why not get it published?



The *Kentucky Journal of Undergraduate Scholarship* (KJUS) is an online journal that will publish original research and creative works by undergraduate students currently enrolled at post-secondary educational institutions in Kentucky.

The topics vary by discipline, and will be categorized into one of several domains, including Life Sciences, Engineering, Social Sciences, Humanities, Creative Writing, Performance Arts, and MORE!

Please visit the website at <http://encompass.eku.edu/kjus/>

We are now accepting submissions!

For more information and questions, please contact the Editor-in-Chief,
Dr. Jonathan Gore (Jonathan.Gore@eku.edu)

Let's show everyone the research and creativity Kentucky has to offer!

EKU LIBRARIES

NOEL
studio
for ACADEMIC CREATIVITY

URCE
Undergraduate Research
and Creative Endeavors

2017 Winner
30th Annual A. Frank and Bethel C. Gallaher
Performance Competition

Alyssa Bodurek



Première Rhapsodie

Claude Debussy (1862-1918)

Alyssa Bodurek, clarinet

Will Murphy, piano

A native of Florence, Kentucky, Alyssa Bodurek is a junior Music Education major at Morehead State University, where she studies clarinet with Dr. Lori Baruth. Alyssa is a recipient of the W. Paul and Lucille Caudill Little Scholarship for Study of the Arts, she serves as Vice President of Morehead States Chapter of National Association for Music Education, 2017 Morehead State University Marching Band Field Commander, and 2017 Kentucky Intercollegiate Band Participant. She is also a member of Symphony Band, Sapphire Winds Woodwind Quintet, and the Morehead State University Clarinet Choir.