Program and Abstracts

Celebration of Student Scholarship

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

April 22, 2015

10th Anniversary Celebration of Student Scholarship

April 22, 2015

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Program Overview	Adron Doran University Center (ADUC)
8:00 – 8:30 am	All student scholars and faculty mentors are to register and pick up programs and name badges (3rd floor ADUC), Posters should be set-up at this time and PowerPoints loaded.
8:30 – 10:15 am	Oral Presentations (ADUC 301, 302, 312, Riggle, Commonwealth, Eagle Meeting and Eagle Dining Room)
10:15 – 10:30 am	Break
10:30 – 11:45 am	Oral Presentations
11:45 – 12:00 pm	Break
12:00 – 1:15 pm	Oral Presentations
1:15 – 3:00 pm	Poster Presentations (posters left up until 4:30 pm)
3:00 – 5:00 pm	Reception (all invited)
3:15 – 3:30 pm	Gallaher Memorial Music Performance
3:30 – 4:30 pm	Awards
4:30 pm	Removal of Posters

Special Thank You to the Following:

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Steve Chen *Michael Henson* *Edna Schack*
Louise Cooper *Philip Krummrich* *Fujuan Tan*
Laurie Couch *Jay Marshall*
Mattie Decker *M. Scott McBride*

Concurrent Session Moderators

Dora Ahmadi *Latonya Hesterberg* *Scott McBride*
Robert Albert *Philip Krummrich* *Roger McNeil*
Margo DelliCarpini *Bruce Mattingly* *Thomas Pannuti*

Judges

Ali Ahmadi
Dora Ahmadi
Larry Albert
Elizabeth Ash
Ray Bailey
Brad Baker
Parker Banks
Bernadette Barton
Greg Bausch
Chris Beckham
Murray Bessette
Giorgos Bidales
Ignacio Birriel
Jennifer Birriel
Mark Blankenbuehler
Robert Boram
Amy Brown
Katy Carlson
Duane Chappell
Doug Chatham
Kelly Collinsworth
Timothy Connor
Christina Conroy
Louise Cooper
Marcia Cooper
Greg Corso
Laurie Couch
John Curry
Mattie Decker
David Eisenhour
Jody Fernandez
Christopher Field
Julia Finch
Chad Gambrell
Cyndi Gibbs
Kurt Gibbs
Gina Gonzalez
Wretha Goodpaster
Don Grant
Seth Green
David Gross
Lynn Haller
Connie Hardesty
Janelle Hare
Timothy Hare
Flint Harrelson
John Hawkins
Sylvia Henneberg
Latonya Hesterberg
Jason Holcomb
Dawn Hood
Steven Hooker
Jami Hornbuckle
Alison Hruby
Lloyd Jaisingh
Eric Jerde
Jeannie Justice
Shari Kidwell
Beverly Klecker
Phil Krummrich
Michelle Kunz
Christine Lange
Stephen Lange
Lesia Lennex
Jeffrey Liles
Jennifer Little
Nina Lum
Krys Lynam
Barb Lyons
Deanna Mascle
Bruce Mattingly
Gregory McBrayer
Jill McBride
Janet McCoy
Troy Meadows
April Miller
Chris Miller
John Modaff
Fatma Mohamed
William Murphy
Lee Nabb
Johnathan Nelson
Kim Nettleton
Scott Niles
Tim O'Brien
Wendell O'Brien
Jen O'Keefe
Becky Parton
Elizabeth Perkins
Roslyn Perry
Kimberly Peterson
Jeanne Petsch
Clarenda Phillips
Jonathan Pidluzny
Marieta Pissarro
Phil Prater
Kent Price
Sharif Rashad
Janet Ratliff
Gilbert Remillard
Brady Reynolds
Randy Ross
John Rousch
Pam Ryan
David Saxon
Edna Schack
Chris Schroeder
Alana Scott
Dayna Seelig
Lisa Shannon
Catherine Shely
Mee-Ryoung Shon
Shane Shope
Duane Skaggs
Cassandra Smith
Lola Smith
Sam Stapleton
Tina Stevens
Sherry Stultz
Fujuan Tan
Joseph Tyler
Joshua Witt
Samuel Wornall
Donna Wright
Capp Yess
Ahmad Zargari

2015 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. Although this year's event was cancelled due to inclement weather, the following Morehead State University students are recognized as official 2015 participants. Those posters at today's Celebration that would have been presented at the Capitol are recognized with blue and gold rosettes.

Zachary Abbott *–Mentor Ilsun White*
Jerrica Ashley *–Mentor Kim Nettleton*
Allison Leigh Becknell *–Mentors Johnathan Nelson, Sam Stapleton*
Andrew Blevins – *Mentors Steve Chen, Janet Ratliff*
Donald James Burns *–Mentor April Haight*
Jonathan Coleman *–Mentor April Haight*
Chelise Lynn Conn *–Mentor Kristina DuRocher*
Erika Cordle *–Mentor Tara Holaday*
Bethany DeMoss *–Mentor April Miller*
Kelsey Estep *–Mentor April Haight*
Jessica Farrell *–Mentors John Hennen, Joy Gritton*
Joshua Fugate *–Mentor Wilson Gonzalez-Espada*
Cody Garcia *–Mentor Nilesh Joshi*
Katherine Gibson *–Mentor Ilsun White*
Samantha Howard *–Mentor Kim Nettleton*
Demi Jacques *–Mentor Bernadette Barton, Elizabeth Perkins*
Chase Johnson – *Mentor Hans Chapman*
Janie Knell - *Mentor Wilson Gonzalez-Espada*
Andrew Kuchenbrod – *Mentors John Hennen, Joy Grtton*
Hannah Mabry – *Mentor Bernadette Barton, Elizabeth Perkins*
Sarah McClanahan – *Mentor Michael Fultz*
Randall Roof – *Mentor April Haight*
Robbie Rowlett – *Mentor Hans Chapman*
Eric Schwarber *–Mentor April Haight*
Tinsley Setters *–Mentor April Haight*
Alyssa Shifflett *–Mentor Tara Holaday*
James Stark *–Mentor Ilsun White*
Connor Strong - *Mentor April Haight*
Lucas Taylor – *Mentor Johnathan Nelson*
Holly Wells – *Mentor Sarah Hawkins-Lear*

For more information on the 2015 Posters-at-the-Capitol please go to:
http://campus.murraystate.edu/services/URSA/2015postersbooklet.pdf

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 tenth 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!

Dr. Wayne 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 their 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 or apply their creative skills and talents that stretch their base knowledge and compliment their 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 Tenth Anniversary of our 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 Public Affairs

The Celebration of Student Scholarship provides a wonderful forum for our talented students to share their research related to the Scholarship of Teaching and Learning (SoTL), which is a critical component to the successful and effective preparation of P-12 educators. The research projects presented here highlight the intentional, systematic, and contextual inquiry that is vital to excellence in teaching in learning and underscores the development of lifelong learners among our teacher candidate population. The College of Education faculty and staff congratulate these students on their scholarly endeavors and share in their celebration of the SoTL.

Dr. Margo DelliCarpini, Dean, College of Education

The faculty and staff within the arts, humanities, and social sciences are committed to learning that involves students and faculty mentors as partners in practice in research and creative production. Through engaged scholarship our students innovate, deepen their scholarly understandings and advance their interdisciplinary insights. With this annual event we celebrate these outstanding scholars and showcase Morehead State University's culture of academic excellence and its long tradition of providing substantial educational opportunities to the citizens of Kentucky.

Dr. M. Scott McBride, Dean, Caudill College of Arts, Humanities, and Social Sciences

The Celebration of Student Scholarship provides a wonderful opportunity to recognize and highlight student scholarship and creative accomplishments. Student research and creative activities, as a collaborative enterprise between student and faculty mentor, is a critical component of undergraduate education and enhances student success as well as teaching and learning across the academy. Students working with faculty experience the excitement of creating new knowledge and solving challenging problems – increasing important life skills in today's world.

Dr. Roger McNeil, Dean, College of Science and Technology

Celebration of Student Scholarship

Adron Doran University Center
Morehead State University

April 22, 2015

Concurrent Session – Commonwealth Room

Moderator: Dr.Robert Albert

8:30 – 8:45 a.m. **Streambank stability and riparian habitat relationships and mapping tools in the Triplett Creek Watershed**

CS - 01

***Nicole Meade, *Phillip Nelson, April Haight and Dr. Timothy Hare, Mentors,* School of Public Affairs, College of Business and Public Affairs**

The Triplett Creek watershed in Rowan County, Kentucky is an impaired waterway. Excess sedimentation from stream bank erosion is a significant contributor (Emrich, et. al., 2013). Since streambank restoration costs approach $150 per linear foot (Walker, 2012), watershed managers need guidance to allocate resources to reduce streambank erosion. This study used the Modified Bank Erosion Hazard Index (BEHI) (Rosgen, 2001) and Habitat Assessment to calculate averages for streambank lengths along 13 tributaries and the mainstem of Triplett Creek. BEHI and Habitat Assessment scores were analyzed using statistical analysis of GIS and field data. BEHI scores did not correlate to Habitat Assessment scores or to bank height The BEHI scores of the tributaries were higher than the mainstem of Triplett Creek, with little difference between the upstream and downstream sections of the mainstem. Analysis of the data did not support improving streambank surface protection as a method to reduce sedimentation. A comparison of percent impervious surface to BEHI showed a correlation between percent impervious surface and BEHI at tributaries. The results suggest that restoration dollars might best be focused, though not exclusively, at tributary mouths and reducing impervious surfaces within these watersheds. Kentucky Water Research and Resources Institute funded this study.

8:45 – 9:00 a.m. **Boutique wineries and the Californization of wine tourism: The Kentucky experience**

CS - 02

***Katherine Rice, Dr. William C. Green, Mentor,* School of Public Affairs, College of Business and Public Affairs**

Wine tourism is a popular form of special interest tourism. The rise of boutique wineries since the mid-1970s has been accompanied by the rise of wine tourism which is defined by visits to wineries and the tasting, consumption, and purchase of wine on site. California has created the model for wine tourism, because it produces 90 percent of domestic wine and has by far the largest number of boutique wineries. California-style wine tourism is defined by large tasting rooms, gift shops, vineyard walks, cellar tours and by facilities for parties and weddings, and guest houses for visitors. The California model has been exported to many other states, including Kentucky. This research focuses on how boutique Kentucky wineries have been "Californianized" by their adoption of on-site activities and by their reliance on the Internet, wine industry associations and their publications, and state government agencies to market themselves.

***undergraduate student presenter**
+graduate student presenter

9:00 – 9:15 a.m. **An examination of U.S. foreign policy toward the Middle East after the Arab Spring**

CS ▫ 03

***Clay Skaggs, Dr. Jonathan W. Pidluzny, Mentor,* School of Public Affairs, College of Business and Public Affairs**

The United States stands as the only global superpower in the post- Cold War era and benefits significantly from its dominant position in the international system. In order to preserve its position, regional stability in areas of concern to U.S. interests, and the prevention of the rise of regional hegemonic powers, is vitally important. The Middle East—an area beleaguered by disorder and rich in natural resources—must therefore remain a focus of U.S. foreign policy. Unfortunately, the region is coming apart today. Many of the states that showed potential for liberalization in the Arab Spring, such as Egypt, have reverted to their illiberal and autocratic tendencies. Iran, a key energy producer and aspiring nuclear power, continues to project influence beyond its borders in ways that undermine U.S. interests. The meteoric rise of the Islamic State threatens to plunge the entire region into disarray. This project, supported by the Office of Undergraduate Research, argues that the U.S. must combat these challenges by empowering allies in the region, sustaining the free flow of energy into global markets, and thwarting the rise of potential regional hegemonic powers (Iran and the expansionist Islamic State, in particular), without exhausting its power and influence.

9:15 – 9:30 a.m. **The fiscal promise and public cost of increasing access to preventative medicine in the United States**

CS ▫ 04

***Tyler Spencer, Dr. Jonathan W. Pidluzny, Mentor,* School of Public Affairs, College of Business and Public Affairs**

This research project explores the effect of the Affordable Care Act (ACA) on the utilization rates of preventive medical services recommended by the United States Preventive Task Force and CDC. The ACA mandates that compliant private health insurance plans, along with Medicare and Medicaid, cover specific preventive services at no cost to patients. Copays and deductibles have been removed from these services in order to promote their use, and, hopefully, to save money in the long run. In order to determine whether this strategy will have a significant effect on the utilization rates, I have reviewed literature, focusing on pertinent case studies, and compared utilization rates of preventative services among states that had different Medicaid benefits before passage of the ACA. Findings are supplemented by interviews with members of local health care organizations in the region, specifically St. Claire Medical Center. My research has produced contradictory results, especially between the literature and interactions with local healthcare administrators. The preliminary consensus reached by the project, generously supported by the Office of Undergraduate Research, is that while the elimination of copays for preventive services is a step in the right direction, a greater focus on education and implementation is required.

9:30 – 9:45 a.m. **Investigating economic diversity in eastern Kentucky's Area Development Districts**

CS ▫ 05

***+Jessica Stewart-Kuntz, Dr. Christine Lange, Mentor,* School of Public Affairs, College of Business and Public Affairs**

This study investigated a range of economic diversity indictors for area economies in eastern Kentucky in order to improve our understanding of their composition and the concomitant risks and opportunities they face going forward. We based our analysis on data obtained from the Appalachian Economic Diversity Web Tool, a website that was sponsored by the Appalachian Regional Commission in order to assist community and organizational efforts aimed at fostering sustainable economic development in the region. Specifically, we examined economic diversity for seven Area Development Districts (ADDs) in eastern Kentucky in terms of their industrial, functional, and occupational diversity. We also evaluated ADD-level data in the context of economic diversity data for Kentucky and Central Appalachia. Finally, we reviewed our findings in light of the most recent strategic economic development plans developed by the eastern Kentucky ADDs. Overall, results demonstrate higher levels of economic diversity in central and western Kentucky ADDs and Central Appalachian planning districts compared with eastern Kentucky ADDs. Additionally, lower levels of economic diversity were found in eastern Kentucky ADDs containing higher percentages of economically distressed counties (and generally weaker strategic economic development plans). This research was funded by a Graduate Assistantship.

10:00 – 10:15 a.m. ***Break***

10:15 – 10:30 a.m. **FDR, the U.S. Constitution, and the rise of the populist presidency**

CS ▫ 06

****Jeffery T. Syck, Dr. Jonathan W. Pidluzny, Mentor, School of Public Affairs, College of Business and Public Affairs***

The American presidency is a continually evolving office. Each man who holds it changes it in his own way, sometimes with lasting consequences for the country's political system. Of all the presidents, Franklin Roosevelt was perhaps the greatest contributor to the creation of the modern presidency. He helped to realize Woodrow Wilson's progressive vision for the institution, enhancing the president's policymaking role and establishing him as undisputed leader of his party. This presentation examines the reasons FDR sought to transform the office and the factors that allowed him to achieve it. This project, generously supported by the Honors Program at Morehead State University, examines the original design of the institution, the origins of the modern presidency in the political theory of Woodrow Wilson, and the realization of the transformation in the politics of Franklin D. Roosevelt.

10:30 – 10:45 a.m. **Factors affecting student satisfaction at Morehead State University**

CS ▫ 07

****Wade Curtsinger, Dr. Ali Ahmadi, Mentor, School of Business Administration, College of Business and Public Affairs***

This study uses multiple regression to investigate the factors that affect the overall satisfaction of students attending Morehead State University. One hundred and twenty (?) students at MSU participated in the survey that was used as the instrument of this study. For the purpose of this study, student satisfaction (the Dependent Variable) was defined as the likelihood that a student would recommend attending MSU to someone in similar circumstances. Several independent variables were included study. The results of the study shows that the two significant factors are: the degree of ease of making friends and the degree to which students perceive the campus culture as similar to that of their own background.

11:45 – 12:00 p.m. ***Break***

Concurrent Session – Eagle Dining Room

Moderator: Dr. Margo DelliCarpini

8:30 – 8:45 a.m. **Animals in the classroom? A review of the literature on the human-animal bond and the effects of the presence of animals in the classroom**

CS - 08

***Sarah Eades, Dr. Mattie Decker, Mentor,* Department of Early Childhood, Elementary, and Special Education, College of Education**

The presence of animals in life is rewarding, but what are the possibilities for animals in the classroom? Does the presence of animals in the classroom have an effect upon student success? Data and research (Olmert, M. (2009) indicate the biological effects on the oxytocin levels in the body with exposure to animals. Numerous sources highlight the positive influence on humans, and in early elementary classrooms this influence can impact learning (Jalongo, M.R.,2005). The purpose of this study is to build a foundation for my own future research in examining how the presence of animals may affect learning in the early childhood classroom. There is extensive literature and previously conducted research in the field of the human-animal bond, which provides a basis for research on the effects of animals in the classroom. This study includes personal interviews, observations and exploration of settings throughout Kentucky that include animals in the classroom in Jefferson, Mason, and Shelby counties.

8:45 – 9:00 a.m. **Universal Design for Learning (UDL) in a Teacher Performance Assessment (TPA)**

CS - 09

***Laura Geiman, Dr. Mattie Decker, Mentor,* Department of Early Childhood, Elementary, and Special Education, College of Education**

Universal Design for Learning (UDL) provides options and flexibility in teaching and learning. Through my undergraduate research focusing on Universal Design, I was prepared to incorporate more creative ideas in my student teaching by using its principles: providing multiple means of engagement, representation, action and expression. I faced the challenges all teachers do with creativity in the classroom within a traditional system primarily designed for "one size fits all." In this presentation I will share the value of my undergraduate research fellowship and Universal Design for Learning and how I was able to apply it in my capstone experience as a student teacher. A three-lesson sequence focusing on plot and theme was taught to 21 second graders of varying ability levels during my student teaching placement. For each lesson, students were taught the specific skill, practiced through a small group activity, then completed a formative assessment. The results of this assessment were examined after each lesson to better prepare for the next lesson. My findings demonstrate growth in all but three students according to the assessment used. By employing a UDL approach I was able to meet the needs of all my students and highlight each student's unique strengths.

9:00 – 9:15 a.m. **Autonomy, assessment, and student success: Feedback that makes a difference**

CS - 10

+Leah P. Simpson, Dr. Jeannie Justice, Mentor, **Department of Foundational and Graduate Studies in Education, College of Education**

Deci and Ryan's Self Determination Theory attempts to explain how individuals are motivated. According to this theory, autonomy, or the ability to freely choose, is the greatest factor in motivation. In education, student autonomy has been linked to greater retention, higher satisfaction, and deeper learning. In other words, students have been shown to be more motivated to persist and succeed when they are offered choice in their learning. These findings have encouraged educators and researchers to find ways to support student autonomy, not only for the benefit of the student but also for the benefit of the program. Drawing from Self Determination Theory literature this research aims to explain how assessment feedback to students can act as an autonomous tool to support student learning. In addition, the review will examine how one assessment technology, ExamSoft, may provide an online assessment environment that not only supports the accreditation and assessment goals of a program, but also supports student autonomy.

10:00 – 10:15 a.m. ***Break***

Concurrent Session - 301 ADUC

Moderator: Dr. Scott McBride

8:30 – 8:45 a.m. **Art enrichment for an alternative high school student**

CS - 11

***Grant Bridges, Dr. Jeanne Petsch, Mentor,* Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

The intention of this project was to provide individualized art enrichment for an alternative high school student who has interest in visual art but no opportunity in the school curriculum to explore his interests. Art materials and one-on-one teaching sessions were provided to assist the student in the development of ideas, personal voice, and the creation of artwork. The researcher served as an art teacher and a receptive mentor who allowed the student to communicate his ideas and experiences. As a trusting relationship was established the student became comfortable in talking about his struggles in school and at home. These experiences and feelings were expressed as he created his work. This student became more confident in testing new ideas and approaches and less resistant to engaging in dialogue and sharing his struggles and frustrations. He also found art making to be a personal strength and used it as a positive means for expression and building self-identity.

8:45 – 9:00 a.m. **Art after hours: Learning to work together through art**

CS - 12

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

This presentation will discuss how art activities can be used to build children's social literacy skills. The art component at the Haldeman after School Program in Eastern Kentucky is using group projects to encourage students to work together. Children collaborate or share materials. Though they are enjoying a creative outlet, they are also learning valuable and necessary lessons for life. This approach is consistent with the Haldeman Center's mission, which is to provide children with a safe haven away from drugs and promote the educational, recreational and social well-being of the community's residents. This research was funded with an Undergraduate Research Fellowship.

9:00 – 9:15 a.m. **Designing on a dime: Creating a virtual presence for non-profit organizations**

CS - 13

***Julieann Helton, Dr. Joy L. Gritton, Mentor,* Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

Art and design influences our everyday lives and with the availability of technology, much of this influence occurs via the internet. People respond to websites that are visually appealing, easy to navigate, and offer engaging information. This presentation documents a service learning project designed to help the Haldeman Community Center After School Program in Rowan County, Kentucky establish a virtual presence so that they can easily share their message and work with the community. Different approaches to creating a functioning and efficient community website are discussed, including display of the center's logo, digital flyers of upcoming events, and information, such as oral history interviews, related to the history of the center. Providing information for those who wish to volunteer or contribute to the After School Program and linking to social media sites is also covered. This project was supported by MSU Undergraduate Research Fellowship and the Haldeman After School Program.

9:15 – 9:30 a.m. **Substance abuse and addiction education for at-risk students**

CS - 14

***Margaret Horton, *Alex Bauer, Dr. Jeanne Petsch, Mentor,* Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

This project involved instituting a 12-week program at the Bluegrass Discovery Academy where students were welcomed to talk honestly with two undergraduate research fellows about substance abuse and addiction. The students received weekly sessions where they were given information about different substances, how to handle addiction, and the effects addiction can have on personal relationships. The main goal of this program was to provide students with the information they needed about harmful substances and the negative effects they cause on their bodies and relationships, while also providing the support they need to face these addictions head-on. Throughout the program, multiple types of media and technologies were used to present effective messages to all students. Activities and lesson plans were constructed weekly to be sure that all needed information was provided throughout the program. The weekly sessions encouraged students to talk openly about their experiences and facilitated one-on-two personal conversations with the fellows. The program also allowed the fellows to understand the personal context of each student, which enabled trusting relationships to build throughout the program.

9:30 – 9:45 a.m. **Fidelis Sermo: Medieval manuscript production**

CS - 15

***Gabriel Lewis, Dr. Julia Finch, Mentor,* Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

The basis of this project is to research and recreate techniques used by monks in early ninth-century Ireland to create the famous Book of Kells, an illuminated manuscript containing the four Gospels of the New Testament among other texts. With a goal of better understanding the materiality of the medieval manuscript, and what its production tells us more broadly about medieval artists, patrons, and the networks in which they operated, we are documenting our attempts at production and our results. The techniques examined and replicated include tanning and scraping cow hide to produce vellum (the writing and painting surface), using medieval recipesto mix natural ingredients for ink and other pigments, copying medieval script using traditional techniques, and applying gold leaf. Our goal is to use these techniques to produce examples of finished folios of script and illumination, adhering to medieval techniques to the best of our ability. In this study, we will also compare select variations in production to determine commonly used techniques by the monks of Iona.

9:45 – 10:00 a.m. **On the path from planning to programming: Art events and exhibitions**

CS - 16

***Tara Madden; Jennifer Reis, Mentor,* Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

The Undergraduate Fellowship in Art Events Management focuses on the conception, logistical planning, marketing, and management of arts programming. Working within the arts programming hosted by the Claypool-Young Art Gallery in the Department of Art & Design, UR Fellow Tara was involved with the planning and management of events during the 2014-15 academic year, including the annual Craft Bizarre: A Student Art and Craft Sale, the annual Halloween Costume Contest and Rocky Horror Picture Show screening, six exhibitions (including a regional design exhibition), and visiting artist programming. Her work on these projects included PR/marketing, hosting special evening and weekend events, exhibition installation, and event planning and troubleshooting. Her experience also includes exhibition submission management of the regional exhibition "Stitch", a multi-state contemporary textiles exhibition. Through the programming at MSU as well as the Craft Bizarre, Tara has become familiar with both for-profit and non-profit art sectors. This fellowship is designed to prepare a student to begin a career in arts administration or to pursue a degree in arts administration, museum studies, or an MFA in studio art. This project is supported by the Undergraduate Fellowship Program, the Department of Art & Design, and the Caudill College of Arts, Humanities, and Social Sciences.

10:00 – 10:15 a.m. ***Break***

10:15 – 10:30 a.m. **The art of the audition: A musician's guide to the audition process**

CS - 17

***Aaron Buede, Dr. Nathan Dishman, Mentor,* Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

Mr. Buede's research has compiled an in depth guide for musicians taking auditions, covering many common audition types. These types include professional orchestral auditions, music festival auditions, recorded auditions, solo competition auditions, and undergraduate/graduate school auditions. Mr. Buede's research focuses on both the underlying factors common to all audition settings, such as efficient preparation and the psychology of the audition event itself, as well as those factors specific to each different setting. To achieve his end, Mr. Buede has drawn on personal audition experience, compiled the most useful aspects from existing resources, and conducted extensive interviews of both his peers and professors. The field of music performance in today's world is one which requires a high level of versatility, as such Mr. Buede believes that his research will be a useful tool for future musicians wishing to give themselves access to as many different performance opportunities as possible by becoming well-rounded auditioners. This research was supported by MSU Undergraduate Research Fellowship.

10:30 – 10:45 a.m. **The evolution of the brass band movement in the Midwest**

CS - 18

***Jonathan Calhoun, Dr. Stacy Baker and Dr. Deborah Eastwood, Mentors,* Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

Brass bands became a popular musical ensemble in Europe during the nineteenth century through the creation of Salvation Army Bands, local industry bands, and community bands. These musical ensemble traditions migrated from Europe to the United States in the form of military and community bands. Today the brass band movement in the Midwest has achieved popularity through the efforts of the North American Brass Band Association, the U.S. Open Brass Band Championships, and events such as the Great American Brass Band Festival, On the Banks of the Wabash Community Band Festival, and the Hannaford Street Silver Band's Festival. This study explores the evolution of the brass band movement in the Midwest and the tremendous impact it has had on the development of a growing repertoire of extraordinary test pieces written by leading and regional composers, investigates how directors organize funding, and how brass bands have provided a vital performance medium for non-orchestral extant saxhorns. This research was supported by a MSU Undergraudate Research Fellowship.

10:45 – 11:00 a.m. **A tale of two times: A collaboration of time periods, cultures, and arts**

CS - 19

***Caroline Clay, Denise Watkins, Mentor,* Department of Music, Theatre and Dance, Caudill College of Arts, Humanities, and Social Sciences**

The 2014 Madrigal Feaste was a splendid holiday celebration dinner, complete with music, actors, costumes, a jester, and even some wassail! Research indicated that traditional Appalachian music and customs are quite similar to those of Renaissance England in many ways. After the initial research phase, the direction of the Madrigal Feaste highlighted these similarities. The product was a spectacular blending of cultures, where families and friends of all ages gathered to ring in the holiday season. This research was made possible by an Undergraduate Fellowship.

11:00 – 11:15 a.m. **Methods and materials for French horn technique and instruction**

CS - 20

***Kathryn G. Jackson, Dr. L. Curtis Hammond, Mentor,* Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

The purpose of this research project is to provide future horn students and music educators with an extensive resource dealing with various aspects of French horn technique, alongside charts of the horn itself, care and maintenance procedures, a brief history of the horn, suggested solo, etude, and method books, and a discography of common solos and ensembles. This project has ultimately evolved into a pedagogical resource alongside a reference manual. It is our intention to use etude literature and orchestra repertoire in order to work on technical problems in a musical context. Portions of this book may be beyond the performance level of younger students; in this case, those students can supplement the advanced excerpts with similar excerpts from solo and ensemble literature on which they are currently working. More-experienced students, in an effort to be more efficient, can replace excerpts with similar passages from solo and ensemble literature on which they are currently working. Those who utilize this method book will find it a useful resource for themselves or their French horn students. This research was supported by an Undergraduate Research Fellowship.

11:15 – 11:30 a.m. **The development of Stravinsky's compositional techniques and common interpretations of his style**

CS ▫ 21

***Glenn Anthony Ritchie, Dr. Nathan Dishman, Mentor,* Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

When looking at Stravinsky's works on a chronological scale, you begin to see defining characteristics of his music that divide his career as a composer into three distinct periods. I have attempted to trace this development through score analysis and surveys of recordings. When analyzing scores and comparing them to their interpretations by major ensembles, you discover that despite what style Stravinsky was composing in or which of his three periods that work comes from, there are common threads in the interpretation of his writing. This goes so far as discovering shared musical ideas among his works. Understanding the historical background of a particular work is key to a successful performance that remains true to Stravinsky's intentions. Using this information, I organized a small ensemble to rehearse and perform Stravinsky's Octet, a defining piece from his second 'Neoclassical' period. Support for this project came from the George M. Luckey Jr. Academic Honors Program.

11:30 – 11:45 a.m. **Amelia Earhart: Merging clothing in the time of the famous flyer with stylized elements**

CS ▫ 22

***Sara E. Shouse, Denise M. Watkins, Mentor,* Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

The play Amelia Earhart is the story of the renowned pilot through the voice of a timeless character, the Reporter. To highlight the timelessness, the costumes are a fusion of vintage and futuristic styles: a look I refer to as aviation retro. The aviation retro style is influenced by the evolution of airplane design. Throughout the research process of this design excursions were made to the Smithsonian Air and Space Museum in order to view garments worn by the flyer as well as see one of the planes that Earhart flew. Additionally books about the pilot were examined as well as the comic book series The Rocketeer. By putting the two styles together this influenced the creation of the style aviation retro. After the show was performed at MSU the design was nominated to compete at the Kennedy Center American College Theatre Festival (KCACTF) for costume design in region four. This is a conference involving over 18,000 students from colleges nationwide. Region four includes Kentucky, southern Virginia, Florida, Alabama, North Carolina, South Carolina, Mississippi, and Georgia.

11:45 – 12:00 p.m. ***Break***

Concurrent Session – 302 ADUC

Moderators: Dr. Latonya Hesterberg & Dr. Philip Krummrich

8:30 – 8:45 a.m. **Hear Me Roar: Exploring identities**

CS ▫ 23

***Alexis Mathews, Dr. Ann Andaloro, Mentor,* Department of Communication, Media, and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences**

This project was produced to be aired on MSU-TV during the Spring semester of 2015. This feature presents Cleaning Closets, an MSU theater production. It includes interviews with cast members and director Jonathan Mayo. This project focuses on personal narratives on coming out as gay, lesbian, or bisexual in Eastern Kentucky. The presentation will also explore the process of putting together video of the theatrical production and interviews for a proposed program for KET. This is supported by an Undergraduate Research Fellowship.

8:45 - 9:00 a.m. **Hear Me Roar: Women and music**

CS ▫ 24

***Rikki Nelson, Dr. Ann Andaloro, Mentor,* Department of Communication, Media, and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences**

This project was produced to be aired on MSU-TV during the Spring semester of 2015. This feature presents women in music. It includes performances and interviews with female musicians. The presentation will also explore the process of putting together video of musical performances and interviews for a program for KET. This is supported by an Undergraduate Research Fellowship.

9:00 – 9:15 a.m. **Production work and social media or "so-so" media**

CS ▫ 25

***Pamela Shay Hammond, Jeffrey Hill, Mentor,* Department of Communication, Media, and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences**

Production work requires the wearing of multiple hats at multiple times. Ms. Hammond worked on 3 production projects, but concentrated on several efforts to contact alumni of the production program. Ms. Hammond used her web savvy to help create social media pages for the department's production area and assist in tracking graduates, with the hope of creating a social media community of production students and alumni. She will discuss the process and results of the campaign. This research was funded with an Undergraduate Research Fellowship.

9:15 – 9:30 a.m. **The value of relics in medieval culture and the Holy Prepuce**

CS - 26

***Carter Kozar, Dr. Glen Colburn, Mentor,* Department of English, Caudill College of Arts, Humanities, and Social Sciences**

It is well known that medieval Christians revered relics associated with Saints and even with Jesus himself. The history of one relic, however, is shrouded in mystery: Jesus' foreskin, the Holy Prepuce. As this artifact was considered a remnant of God on Earth, it attracted an extensive following in the Middle Ages and was claimed by some to have healing powers. Did most medieval Christians believe that the little fragment of skin could perform miracles, or did they instead believe that it was merely a holy symbol? This project will explore the medieval ideology behind the cult of relics while specifically looking at the controversy surrounding the Holy Prepuce.

9:30 – 9:45 a.m. **Intergenerational conflict meets racism: The parent-child relationship in Lucille Clifton's work**

CS - 27

***Charli Ann Lootens, Dr. Sylvia Henneberg, Mentor,* Department of English, Caudill College of Arts, Humanities, and Social Sciences**

African-American writer Lucille Clifton's children's books and poems dealing with parenting or family relationships exude an air of regret, neglect, distance, and hopelessness. The black children in these works are left yearning for acknowledgement, affection, and attachment. Even the more nurturing of Clifton's parent-child relationships are sub-standard at best. The children lack a fundamental understanding of how society operates and how this causes their parents to behave. The portrayal of these intergenerational shortcomings serves as Clifton's indictment of the society that has created a class of people still largely unable to advance their societal standing. The black children in Clifton's works receive as little guidance from their parents as their parents, in turn, receive from the mainstream society that seeks little more than to cast them out. Clifton's work exposes worrisome parallels between dysfunctional and unfulfilling relationships between black parents and their children on the one hand and, on the other, black and white US cultures of the 20th and 21st centuries.

9:45 – 10:00 a.m. **Traveling across state lines: Examining the written accounts of Bill Bryson and William Least-Heat Moon in American road literature**

CS - 28

***Sarah M. Francis, Dr. Philip Krummrich Mentor,* Department of International and Interdisciplinary Studies, Caudill College of Arts, Humanities, and Social Sciences**

From Mark Twain to Eddy L. Harris, numerous novels and nonfiction works have been devoted to the exploration and recount of traveling across the United States. The research of this study is dedicated to examining the works of two well-known travel writers for comparison: Bill Bryson's The Lost Continent and William Least-Heat Moon's Blue Highways. Studying the two books simultaneously assists to accentuate the authors' purposes, authenticity, and character depictions, due to the glaring dissimilarities in the writing styles and dispositions of the two authors. When read and analyzed with these elements as the focus for their stories, we find that even though both authors take a similar route across America, they complete vastly different journeys.

10:00 – 10:15 a.m. ***Break***

10:15 – 10:30 a.m. **Two mutually supported translation projects**

CS ▫ 29

***Cailin Wile, Dr. Philip Krummrich, Mentor,* Department of International and Interdisciplinary Studies, Caudill College of Arts, Humanities, and Social Sciences**

During my exploration of translating post-colonial African poetry from its original French into English, challenges specific only to the field of translation have arisen. This presentation deals with those types of challenges, how they have been overcome or lessened, and how working side-by-side with a professor who is doing his own translation of a novel originally written in Galician is an interesting and invaluable opportunity for undergraduate research. This research is supported by the Academic Honors Program.

10:30 – 10:45 a.m. **Consequences of the steroid era in major league baseball**

CS ▫ 30

***Andrew T. Perrin, Dr. Alana Cain Scott, Mentor,* Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

The steroid era in Major League Baseball was a period in which numerous players experimented with and relied on the use of performance-enhancing drugs (PEDs) such as anabolic steroids and human growth hormone to improve their performance as baseball players. This period saw an unprecedented increase in the ability of hitters to hit for power, including home runs. The heart of the steroid era is commonly considered to be from the mid-1990s through the mid-2000s, during which time home run totals soared and records were broken. Although exciting at the time for the average fan, it became clear that the increased ability of baseball players was due to something besides pure talent. As more evidence became known and players were caught using PEDs, the steroid era became a dark spot on the history of baseball. The consequences of the steroid era in Major League Baseball are that statistical records and the Hall of Fame have been corrupted by steroids, the game of baseball has seen the competitive balance shift to pitchers since the end of the steroid era, and the use of steroids by players has led to an increase in player salary which economically impacts the fans.

10:45 – 11:00 a.m. **Looking into the crater**

CS ▫ 31

***Jaron Rucker, Dr. Adrian Mandzy, Mentor,* Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences.**

The atrocities of the American Civil War are numerous especially those committed on the African American Union troops. The event that took place at the Battle of the Crater on July 30th, 1864 is perhaps the most vivid example of how racial fears exploded. This research focuses on the Battle of the Crater and how it has been remembered. What forces have impacted the memorialization of the battle? How was the memory different for United States Colored Troops, the white Union soldier, and the Confederate veterans after the event? The results find that the legacy of the USCT is nearly forgotten at the site, in part due to actors like William Mahone and even white Union soldiers. Through the manipulation of memory and the use of such ideas as the “lost cause” the commemoration of the USCT massacre has been eclipsed by that of the “last great confederate” victory. This research was funded by an Undergraduate Research Fellowship and aided by a field survey of the Crater battlefield.

11:00 – 11:15 a.m. **The fourth wave: Exploring the landscape of the contemporary feminist movement**

CS ▪ 32

***Tracy Blevins, Dr. Bernadette Barton, Mentor,* Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

For many young feminists, there is a distinct generational divide between the previous "third-wave" and the current feminist movement. This presentation explores the connections, as well as the discernable differences, between the fourth-wave and preceding feminist movements in order to provide an understanding of the current feminist landscape in a way that may be useful to future feminist education and activism. In particular, interview subjects identified technology, including social media and blogging, along with raunch culture, our hyper-sexualized media culture, as pivotal elements defining fourth-wave feminism.

11:15 – 11:30 a.m. **Exploring homeless males' vulnerability to the sex trafficking industry in Kentucky**

CS ▪ 33

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

Interviews will be conducted with homeless males in Louisville, Kentucky, to attempt to gain a greater understanding of the prevalence of sex trafficking among this population. This project is significant because there is a scarcity of information available. Our focus is on the homeless male population, as homeless individuals, especially young people, are at an increased risk for being victims of this crime. This project proposes to explore sex trafficking of homeless males in the state of Kentucky with the hopes of gaining a clearer understanding of the scope of the problem. We plan to accomplish this goal, via qualitative interviews with homeless males. These interviews will help us to examine the pathways in and out of sex trafficking for homeless men, while allowing us to explore other topics of concern such as trauma bonds, and the labeling of the male victims in the system. This project is supported by MSU Undergraduate Research Fellowship

11:30 – 11:45 a.m. **Student satisfaction with sex education**

CS ▪ 34

***Demi N. Jacques, Dr. Bernadette Barton and Dr. Elizabeth Perkins, Mentors,* Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

Sex education in public schools is a much debated topic; however the students who are affected by their education are rarely involved in the debate. Interviews with Morehead State University undergraduate students attempted to pinpoint when sex education occurred (middle school, high school, etc.), what information it consisted of, and how satisfied students are, in hindsight, with the education they received. The interviews sought to gauge their satisfaction with their sex education as well as explore other ways in which they learned about sex, sexual health, sexuality, gender, and related topics. Overall, most students were unsatisfied with their sex education which typically occurred for a short amount of time in middle or high school. Students brought up a plethora of information they wished they had learned and discussed other ways, which were typically not reliable sources of information, in which they learned about sex and related topics. Student satisfaction with the education they received as well as their thoughts in hindsight can be extremely helpful to identify the gaps present in sex education in the U.S. This research was supported by an Undergraduate Research Fellowship.

12:00 – 12:15 p.m. ***Break***

Concurrent Session –Riggle Room

Moderator: Dr. Roger McNeil & Dr. Bruce Mattingly

8:30 – 8:45 a.m. **Signal detection analysis of visual and tactile stimuli on level of attention**

CS - 35

***Zoe Becerra, James Casper, Dr. Gregory M. Corso, Mentor,* Department of Psychology, College of Science and Technology**

This study investigated human vigilance. In order to assess vigilance we used the classic Mackworth Clock paradigm. Participants (N=28) watched a ball move from tick mark to tick mark on a round-faced analogue clock. The ball would randomly skip a tick mark and the participant's task was to press the spacebar when the ball skipped. Each participant completed two sixty-minute non-consecutive sessions, a control session lacking a preparatory signal, and an experimental condition with one of three levels of a preparatory signal—a between participant independent variable. The three levels of the preparatory signal were a visual warning sign, a vibratory signal, or both. Additionally, there were trials where the preparatory signal was absent. The sessions were counterbalanced (control vs. experimental). The results showed that the preparatory signal did increase the probability of a hit, specifically the combined visual and vibratory signal showed the highest probability of a hit, but interestingly it also had the highest rate for false alarms. In an attempt to combine hits and false alarms, we used the signal detection measure of d'. The combined measure did not result in any statistically significant differences in d' among the signal types or between signal versus non-signal trials.

8:45 - 9:00 a.m. **Fat or fiction: Competing media messages' influence on behavioral health**

CS - 36

***Andrew G. Preston, Laura J. Secord, Dr. Tim S. Thornberry, Mentor,* Department of Psychology, College of Science and Technology**

Research on health messages suggests that portraying weight as a fault incites weight stigma. Consequently, messages have begun to permeate the media to persuade Americans to focus on health. However, the size acceptance movement has also been surfacing and offers that weight is not a determinant of health and that weight stigma should be exterminated at all costs. While these two messages are inherently positive and serve to alleviate some degree of distress, they often send mixed messages and rarely encompass one another. The present study addresses this mixed media message by examining how two prevalent messages (body positive vs. health conscious) affect perceptions of obesity. We hypothesized that participants who read about an obese individual happily selecting a salad will have more positive responses than those who read about an obese individual happily selecting a burger. We expected gendered stereotypes to emerge within the manipulation, with females being associated with the salad condition, males with the burger. Lastly, we expected these manipulations to vary with participant attitudes towards body image and scores of anxiety and social well-being, such that poorer self-image and mental health would predict negative response to the salad commercial.

9:00 – 9:15 a.m. **A signal detection analysis of detecting changes in a moving object**

CS - 37

***Taylor Smith, Zoe Becerra, Dr. Gregory M. Corso, Mentor,* Department of Psychology, College of Science and Technology, & *Dr. Nicholas Kelling,* University of Houston - Clearlake**

This study, in which forty-three participants watched a series of videos multiple times, was designed to assess how well people can detect changes in the speed and direction of a moving object. The videos presented a black ball that moved across a white screen. The call would then move behind a black bar, which varied in width, and came out the other side. For one-half of the session the participants watched to see if the ball paused while it was behind the bar, while for the second-half the participants watch for the ball to change direction. The sessions were counterbalanced across participants. For the condition where the ball paused, the pause duration, the ball velocity (2.8 and 4.75 cm/s), and the bar width were within- subject variables. For the condition where the ball changed directions, the within-subject variables were initial direction, deviated direction (±1-±4), and bar width (1 cm vs. 2 cm). The data will be further analyzed with the use of the signal detection theory. The metrics of signal detection theory will look at how people discriminate between two different stimuli presented within the experiment, which will lead to further information about people's ability to discriminate dynamic changes.

9:15 – 9:30 a.m. **Farm to table: Working with various organizations to implement garden programs that provide fresh produce to schools and non-profit organizations**

CS - 38

***Carly A. Stephens, Amy Lentz, Mentor,* Department of Agricultural Sciences, College of Science and Technology**

Teaching others to raise produce can positively impact their lives. Working with various garden programs at Rowan County High School and Morehead State University are great learning experiences for such a task. At RCHS, raised bed production allows for a manageable sized garden, especially for children. Using painted recycled materials, such as old tires and wood creates a sustainable and aesthetically pleasing space. From this program, we learn that the quality of soil, adequate drainage, and having a reliable water source close by directly relate to healthy plants and higher quality produce. Local children gained important skills of hard work and how to provide healthy foods for themselves and others. Similar to the program at the high school, MSU students learn how to raise a variety of fruits and vegetables to share with the local community through sales at the MSU Farm and to campus dining facilities. MSU is working with the State of Kentucky to establish a Governor's Garden program, where a demonstration plot teaches the community to garden and provides produce to local shelters and soup kitchens. Thank you to the Center for Regional Engagement for the undergraduate fellowship that allowed me to work with these important programs.

9:30 – 9:45 a.m. **Structure and composition of epiphyte communities on eastern hemlock in Spaws Creek Gorge, KY**

CS - 39

***Arlo Barnette, Dr. Allen C. Risk, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

The eastern hemlock (Tsuga canadensis) is a conifer at serious risk in the Appalachian region due to the presence of the hemlock woolly adelgid (Adelges tsugae), a non-native insect deadly to the tree. This study aims to determine the type and distribution of epiphytes on the trunk and branches of the eastern hemlock, in an effort to expand knowledge concerning the natural history of the species before canopy-sized individuals disappear from the region. The ongoing study was conducted at Spaws Creek gorge in Menifee County, Kentucky. Lichens and bryophytes were collected at the base of a roughly 200-year old specimen and at 3m intervals up the trunk on all four cardinal compass directions, and from the tops of branches at these same levels in 10x30cm quadrats spaced at 60cm intervals along the full length of each branch. Abiotic and biotic variables were recorded for each quadrat. All epiphytes were then collected from the quadrats, identified to species, and percent cover estimated for each. This information was used to extrapolate values for species richness and distribution throughout the tree. This research was supported by an MSU Honors Program Research Fellowship.

9:45 – 10:00 a.m. **Vascular flora inventory and species richness prediction for Eagle Lake Watershed, Morehead, KY**

CS - 40

***Breanna G. Knicely, John May, Dr. Allen C. Risk, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

An ongoing inventory of vascular plant species was conducted throughout multiple areas of the Eagle Lake watershed during fall 2014. Eagle Lake's watershed consists of an area of 198 hectares which is home to many different species of vascular flora. The samples gathered during field work will be supplemented by previously collected specimens from Eagle Lake that are stored in the Morehead State University herbarium. A total of 109 specimens representing 38 families, 69 genera, and 90 species were collected from the watershed. A threatened species in Kentucky, Stenanthium gramineum, featherbells, was found in two separate populations in the watershed, one located on a lower, east-facing slope and the other in a wetland area at the upper end of the lake. This species has been recorded in only 20 counties throughout Kentucky. Based on a species-area curve developed by reviewing previously published studies, it is predicted there are 389 species in the watershed of Eagle Lake, thus indicating there are 300 species left to be documented. This research was supported by an Honors Program Research Fellowship of Morehead State University.

10:00 – 10:15 a.m. ***Break***

10:15 – 10:30 a.m. **The history and importance of dichotomous keys and their utilization in surveying Eagle Lake's plant diversity**

CS - 41

***Jonathan May, Breanna Knicely, Dr. Allen C. Risk, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

Floral identification is deeply rooted in ritual and ethnic folklore among various peoples and groups throughout time. The revolution in taxonomic keys to the dichotomous form, however, urged transition from telling tales to tell-tale identification. Prominent botanists from the 18th century to present were committed to scientific rigor in phenotypic determination of plants based on specimens at hand. Practical application of choice-based identification leads researchers to discovery of site-specific biodiversity with confidence. An ongoing survey conducted during the fall 2015 semester of the floral biodiversity at Eagle Lake watershed resulted in the collection of 90 species. Their identification via dichotomous keys paired nomenclature with woody and herbaceous field specimens by inspection of vegetative and/or sexual characteristics. The development of a key based on Eagle Lake findings has proven useful for deepening understanding of plant taxonomy. In creation of this direct route to identification of woody plants, the most useful characteristics were those of vegetative morphology including the stature of a plant, leaf arrangement, leaf shape, bud appearance, and bundle scar pattern. This study was made possible in conjunction with the MSU Undergraduate Research Fellowship program.

10:30 – 10:45 a.m. **Relationship between climatic variables and growth rates in Oxydendrum arboreum (sourwood), an understory tree species, Eagle Lake, Morehead, KY**

CS - 42

***Benjamin Rasp, Dr. Allen C. Risk, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

Trees respond to their surroundings and thus are affected by climatic variation. Dendroclimatology is a science that examines the relationship between climate and tree growth. The primary objective of this study was to determine the correlations between climatic variables and the standardized annual ring widths of Oxydendrum arboreum (sourwood). Another objective of this study was to see how the species response to climate varied from low to high elevation. The study site is a 1000 m2 plot that is near Evans Branch upstream of Eagle Lake and approximately 1090 ft. in elevation. The study plot has three Quercus species, Nyssa sylvatica, Acer rubrum, and Pinus rigida co-occurring with O. arboreum. Using COFECHA, a quality control program that checks the accuracy of dated series, the initial output showed that there were two problem segments and, after four correctional runs, COFECHA reported zero problem segments. The annual standardized ring widths of O. arboreum will be compared to annual and monthly data for Palmer Drought Severity Index (PDSI), precipitation, and temperature. This research was supported by the MSU Honors Program Undergraduate Research Fellowship.

10:45 – 11:00 a.m. **A preliminary herbaceous plant species floristic inventory of Carter Caves State Resort Park, Carter County, KY.**

CS - 43

***Mary D. Webb, Dr. Allen C. Risk, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

Carter Caves State Resort Park, located in north-central Carter County and established in 1946, covers over 2,000 acres and is rich in geological features. The geology of the park is dominated by sandstone and limestone and includes caves, sinkholes, natural bridges, box canyons, deep gorges, steep-sided cliffs, and rockhouses. An ongoing inventory of the herbaceous angiosperms in the park, including specimens from an assessment of the Morehead State University Herbarium and those collected in the 2013 and 2014 spring and fall semesters, has so far produced 355 specimens comprising 241 different species. The plant families best represented by this preliminary inventory are Asteraceae (aster family) and Cyperaceae (sedge family) with 34 and 26 species, respectively. Castilleja coccinea (L.) Spreng (Indian Paintbrush), listed as endangered by the Kentucky State Nature Preserves Commission in Kentucky, was found by W.A. Welter in 1939, but has not been observed in the present study. In 2015, additional specimens will be collected from areas and habitats not yet visited within the park in order to further document the herbaceous flora of this biologically diverse state park. This project was supported by an MSU Undergraduate Research Fellowship.

11:00 – 11:15 a.m. **An early Silurian dysaerobic fauna from eastern Kentucky, U.S.A.: Changing Paleozoic patterns of dominance and tropic structure in dysaerobic communities**

CS - 44

***Stewart M. Abrams, Dr. Charles Mason, Mentor,* Department of Earth and Space Science, College of Science and Technology**

Dysaerobic faunas are reported from Upper Paleozoic (Devonian and later) rocks and are characterized by mobile, molluscan-dominated faunas that include deposit feeders, browsers and scavengers. These faunas comprise low-diversity, high-abundance, juvenile forms. Here we report what may be the first Early Paleozoic dysaerobic fauna from the gray shales of the Lower Silurian Estill Shale Member of the Crab Orchard Formation in eastern Kentucky. Deposition was in the subsiding Salinic foreland basin during a period of global sea-level rise and regional tectonic subsidence. Like other dysaerobic faunas, this fauna exhibits a low-diversity, high-abundance fauna composed of juvenile forms. However, unlike Late Paleozoic dysaerobic faunas, this Early Paleozoic fauna was dominated by sessile filter feeders, including brachiopods, bryozoans and crinoids. This fauna probably evolved in response to slow subsidence in the Salinic foreland basin. Although small size was probably a means to accommodate surface area/volume ratios in O2-poor waters, filter feeding may not have been an effective means of feeding in deeper waters where transporting currents were apparently minimal or lacking. Thus, this fauna may have been an initial attempt by filter feeders to adapt to deeper, dysaerobic, basinal settings, but it does not appear to have been successful in the longer term. By Devonian time, filter-feeding dysaerobic faunas had largely been replaced by a mobile molluscan fauna with lower O2 needs and capable of adapting to muddy substrates.

11:15 – 11:30 a.m. **Proposed LEED certification for MSU building**

CS - 45

***+Michael Cooper, Steve Easterling, Dr. Sanjeev Adhikari, Mentor,* Department of Applied Engineering and Technology, College of Science and Technology**

Morehead State University has need for LEED Certification to better improve its sustainability in ways such as reducing its environmental impact and saving energy, water, and money. Most of the changes would involve space and resource efficient lighting and water fixtures which are the main usage/wastage points for energy and water. These changes would make MSU further environmentally and financially stable as well as establish a positive example for other universities.

11:30 – 11:45 a.m. **Design and analysis of a LabVIEW and Arduino-based automatic solar tracking system**

CS - 46

***+Caiwen Ding, Dr. Yuqiu You, Mentor,* Department of Applied Engineering and Technology, College of Science and Technology**

Solar energy system is becoming the major renewable system to replace the conventional energy resources due to the inexhaustible resource and its environmental advantages. Automatic solar tracking systems have been designed and studied by many researchers, but the high initial investment and low system efficiency still prevents a wide implementation of such type of systems. The data processing of virtual instruments is faster than microprocessor. A prototype of the system will be designed and built with solar panels, stepping motors, motor drives, photosensitive sensors, Arduino, and LabVIEW controller. The research will try to answer the following questions: What is the feasibility of an automatic solar tracking system? What design and specific architecture is needed for a solar tracking system that is at the lowest cost and the highest accuracy relative to residential needs? How much more electricity can be converted in the solar tracking system when compared to the latitude tilt fixed PV system? The study will determine the energy conversion efficiency.

11:45 – 12:00 p.m. ***Break***

12:00 – 12:15 p.m. **Role of human modeling and simulation in ergonomics risk analysis**

Chosen for presentation at the 2015 Posters-at-the-Capitol

CS - 47

***Cody Garcia, Dr. Nilesh Joshi, Mentor,* Department of Applied Engineering and Technology, College of Science and Technology**

Industrial workers spend significant amount of time on their assigned workstations performing tasks that are repetitive in nature. These tasks are not only physically exhausting but also impose biomechanical stresses on workers. In this research, human modeling is used to simulate industrial workers and their work environments. Using the simulation software, the virtual workers are designated to perform similar tasks as in real life situations. The purpose of the study is to explore ergonomic risk factors that can lead to various musculoskeletal diseases and complications. Using various ergonomics risk analysis tools in a simulated environment, we collected data on multiple health problems caused by the tasks performed and gained information that allowed us to adjust the workers' positions and/or the positions of the workstations to improve work environment and productivity. A minimax model is used to identify and minimize ergonomic risk factors. Additionally, sensitivity analysis is used to compare the strains endured by 5th, 50th, and 95th percentile male and female workers. This project is supported by the Undergraduate Research Fellowship.

12:15 – 12:30 p.m. **Factors that influence university student participation in physical activity**

CS - 48

***Haley Tye, Elizabeth Ash, Mentor,* Department of Health, Wellness, and Human Performance, College of Science and Technology**

This research project investigates what factors influence students' participation in physical activity. It also pinpoints which factors limit and/or prevent a student's participation in physical activity. This research has several functions; 1) to interact and engage with those who currently utilize physical activity resources and determine why they participate in their designated activity, 2) to interact and engage with those who do not currently participate in physical activity and to determine why this is, and 3) to generate data that can assist the university in promoting physical activity at this important stage in individuals lives to promote healthy exercise habits for the future. This research was supported by the Morehead State University Undergraduate Research Fellowship and the Morehead State University Honors Program.

12:30 – 12:45 p.m. **Design of an improved autoclave (Jumpin' Jack Flash)**

CS - 49

***+Nathan Toy, *Cheyenne Brown, Dr. Benjamin Malphrus, Dr. Qingzhou Xu, and Kevin Brown, Mentors,* Department of Earth and Space Science, College of Science and Technology**

The modern autoclave has not seen improvement in approximately 150 years. It may be possible through the use of automatic pressure relief valves to heat water to a temperature above its boiling temperature while in liquid state and vent to atmospheric pressure causing the heated liquid water to 'flash steam', a process which may be more sanitary than a standard autoclave. This process would require approximately as much energy as required to boil water, but that energy would be stored in the pressurized liquid water until a valve opens, which suddenly reduces pressure in the liquid water, and yields a condition in which steam is suddenly produced. The object of this device is to rupture any microorganisms contained within it and determine if this process is sufficient to sterilize prions. No external funding source has been identified at this time.

12:45 – 1:00 p.m. **A demonstration of cellular growth in a microgravity environment leveraging platforms supporting CubeLab technology aboard the International Space Station**

CS - 50

+Sara Phillips, Yevgeniy Byeloborodov, Kien Dang, Jordan Healea, Jonathan Fitzpatrick, Michael Robbins, Robert Twiggs, Mentor, **Department of Earth and Space Science, College of Science and Technology**

A demonstration of cellular growth in a microgravity environment experiment using new CubeLab technologies developed by Space Tango will be housed aboard the International Space Station, as a means to enhance microgravity research. The primary emphasis of this lab specifically is in the interest of exomedicine research. The demonstration designed will provide viability of the TangoLab as a successful platform for exomedicine research. A fungal specimen will be cultured and imaged to prove the effectiveness of the innovative CubeLab system. The CubeLab system will provide a variety of roles: 1) properly maintain the growth environment 2) ensure proper containment of the specimen and 3) image the specimen. The Cube will be also required to manage command and data handling between the payload and various monitoring sensors. The TangoLab housing will provide power to the Cube and handle all data communications between Earth and the International Space Station. This research is financially supported by the Department of Earth and Space Science and Space Tango LLC.

1:00 – 1:15 p.m. **Analysis of Naked Eye Limiting Magnitude Data from two Citizen Science Databases**

CS - 51

****Hannah M. Winsor, Dr. Jennifer Birriel, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

The Great World Wide Star Count (GWWSC) and Globe at Night (GaN) websites provide free public access to eight plus years of naked-eye limiting magnitudes (NELM). These data are reported by citizen scientists from 2006 to the present as part of an ongoing effort to educate citizens about light pollution and to provide a database of global night sky brightness measurements. We summarize the data and perform a simple statistical analysis. GWWSC data are compared with the Globe at Night (GaN) data over the same time period. The global average NELM values are generally comparable across the two data sets. We discuss the implications of the data.

Concurrent Session – 312 ADUC

Moderator: Dr. Thomas Pannuti

8:30 – 8:45 a.m. **Numerical modeling and orbital simulation of the Cosmic X-ray Background Nanosatellite 2 and interaction with the South Atlantic Anomaly**

CS - 52

***+Jonathan Fitzpatrick, Dr. Benjamin Malphrus, Mentor,* Department of Earth and Space Science, College of Science and Technology**

In preparation for the Cosmic X-ray Background Nanosatellite 2 mission, a simulation of the currently known properties of the orbit was conducted to assist with design decisions and to determine and mitigate risk inherent with the mission with respect to orbital parameters. In particular, a focus is the effect of the South Atlantic Anomaly on the general electronics of the spacecraft in addition to the X-ray radiation detector. Modeling was conducted using Systems Tool Kit (STK) developed by Analytical Graphics Inc. In addition to radiation data predictions link budgets of the communications systems were modeled based on current designs. Results of these simulations are presented here.

8:45 - 9:00 a.m. **Discovery of a previously unknown pulsar, PSR J1930−1852, using archival green bank telescope data**

CS - 53

***Sonny Ernst, Jennifer B. Carter and Dr. Benjamin Malphrus, Mentors,* Department of Earth and Space Science, College of Science and Technology**

Students involved in the National Radio Astronomy Pulsar Search Collaboratory (PSC) are trained to analyze archival data taken from the Green Bank Telescope (GBT) drift scan survey in search of a class of rapidly rotating neutron stars known as pulsars. On Monday, June 2nd at 3:00 a.m. the author was analyzing GBT data in which there appeared to be a previously undiscovered Rotating Radio Transients (RRAT) which are thought to be dying pulsars. On September 3rd at 8:12 a.m. a follow-up observation was performed using the GBT. This source was indeed a RRAT and since then, two other observations have been made. Further observations are under way to determine specific characteristics. This work was preformed through PSC, a joint project with the National Radio Astronomy Observatory (NRAO) and West Virginia University (WVU), and funded by the National Science Foundation (NSF). A discussion of the data analysis techniques utilized and conclusions of the research will be presented.

9:00 – 9:15 a.m. **Design of an attitude control and determination system for the cosmic x-ray background nanosatellite – 2**

CS - 54

***Yevgeniy Byeloborodov, *Andrew Cavins, Dr. Benjamin Malphrus, Kevin Brown, Jeffery Kruth, Mentors,* Department of Earth and Space Science, College of Science and Technology**

Nanosatellites often require attitude determination and control in the free fall environment of low earth orbit (LEO). Our team is developing an attitude control and determination system (ADCS) for a scientific research satellite "CXBN-2"- a nanosatellite based on the 2U CubeSat form factor. Three magnetometers are used for the ADS (attitude determination system) to determine the attitude based on sensing of the Earth's magnetic field. The ACS (attitude control system) consists of three magnetorquers, which are electromagnets with magnetic alloy cores. They are located orthogonally to each other and mounted on the PCB inside the spacecraft and allow three-axis control of rotation and pointing. The hardware, software, and electronics are being developed to operate in the harsh LEO environment and to be integrated into the CubeSat satellite. Our work includes designing, simulating, manufacturing and testing the subsystem.

9:15 – 9:30 a.m. **Spatially-resolved x-ray spectroscopy of the Galactic Mixed-Morphology Supernova Remnant IC 443 (G189.1+3.0)**

CS - 55

***Alekzander R. Kosakowski, Dr. Thomas Pannuti, Mentor,* Department of Earth and Space Science, College of Science and Technology**

We present a spatially-resolved spectral analysis of two pointed observations made with the Chandra X-ray Observatory of the Galactic mixed-morphology supernova remnant (MM SNR) IC443 (G189.1+3.0). MMSNRs are intriguing objects that feature a contrasting shell-like morphology in the radio and a center-filled morphology in the X-ray. The Chandra observations cover the northeastern rim and southern rim of the SNR and the total effective exposure time of the two observations is approximately 150 kiloseconds. Spectra were extracted from multiple regions located across the angular extent of IC 443 and fit with standard thermal models with the goal of identifying variations in the spectral properties of the X-ray emitting plasma, such as in temperatures and in elemental abundances. We obtained statistically acceptable fits for the majority of these regions using a non-equilibrium ionization collisional plasma thermal model with average initial and current plasma temperatures of 2.05 keV and 0.35 keV, respectively. Abundances of select elements are found to be broadly consistent across the whole source and reduced with respect to solar abundances. IC 443 does not appear to belong to a subclass of MMSNRs that feature X-ray emission dominated by stellar ejecta released by the initial supernova explosion.

9:30 – 9:45 a.m. **Design of an evolved communications system for the second cosmic x-ray background nanosatellite**

CS - 56

***Mathew Hardin, Kevin Z. Brown and Dr. Benjamin Malphrus, Mentors,* Department of Earth and Space Science, College of Science and Technology**

The current communications system in design for CXBN-2 utilizes many components from its predecessor CXBN while improving several design aspects intended to improve the margin in the space-Earth communication link. The system utilizes the Astrodev-Li radio for low bandwidth transmissions in the UHF frequency band and the Astrodev-Be radio for the high bandwidth data downlink in the S-band. Both radios have flight heritage on CXBN. The system deviates from the CXBN design in the adjustment to both the antenna deployment system and the configuration of the antenna blades with reference to satellite. The change in antenna alignment will reduce loss in the phase network utilized in the antenna as well as reducing the complexity of the phased network itself. The current design and state of development is described here.

9:45 – 10:00 a.m. **Microprocessor selection and qualification for Command & Data Handling Subsystem for the Morehead Cosmic X-ray Background Nano-satellite**

CS - 57

***Jennafer L. Grindrod, Kevin Brown, Jeff Kruth, and Dr. Benjamin Malphrus, Mentors,* Department of Earth and Space Science, College of Science and Technology**

The Command & Data Handling (C&DH) Subsystem is the "brain" of a satellite. The C&DH allows Control & Data transit to occur between the other subsystems, and also serves as the central processing unit. Stored collected data in the C&DH subsystem is transmitted via radio to the Morehead State University's ground station. Processor selection is vital to implementing a successful C&DH subsystem. The microprocessor must meet many often conflicting requirements in order to function properly in the satellite. Requirements include adequate processing capability and clock speed to accommodate the spacecraft subsystems and payload. An additional key requirement is survival in the harsh space environment. A prototype C&DH is under design for CXBN-2 that will be fabricated and tested relative to its capabilities to meet the mission requirements. The initial design is presented here.

10:00 – 10:15 a.m. ***Break***

10:15 – 10:30 a.m. **Development of the Tu-POD satellite deployer at the Morehead State University Space Science Center**

CS - 58

***Travis S. Miller, David S. Mays, Jennafer L. A. Grindrod, Zachary S. Taulbee, Jacob R. Wade, Robert Twiggs, Mentor,* Department of Earth and Space Science, College of Science and Technology**

With the recent advances in small satellite technologies, concepts and systems like the TubeSat form factor have been developed. TubeSats are hexadecagon-shaped satellites that are 12.7cm tall and 8.94cm in diameter and weigh about .75 kg and can serve as a low cost way to get experimental hardware into space. This new generation of satellites needs an appropriate system to deploy them. The TubeSat PicoSat Orbital Deployer or Tu-POD, first envisioned by Robert Twiggs at Morehead State University, is a deployer/satellite that fits inside of a Poly PicoSat Orbital Deployer or P-POD and, once in orbit, deploys TubeSats. The Tu-POD also pushes the boundaries farther than ever before by being made of Windform XT, a carbon fiber reinforced composite material that is 3D printed. After the Tu-POD completes its mission as a launcher the on board electronics then allows it to function as a satellite. The Tu-POD is currently being developed and tested by students at the Morehead State University Space Science Center for its upcoming launch from the International Space Station. Support provided by: Morehead State University, Morehead State University Space Science Center, Robert Twiggs, Teton Aerospace, GAUSS .Team (customer).

10:30 – 10:45 a.m. **Development of a low power radiation detector system for femtosatellite based high altitude experiments**

CS - 59

***David Mays, Sean McNeil, Dr. Benjamin Malphrus Mentor,* Department of Earth and Space Science, College of Science and Technology**

Morehead State University is making advances in the adaption of solid-state radiation detectors for use in small satellite payloads. Solid-state detector technology has allowed for the miniaturization and robustness of radiation sensors to improve greatly over that of traditional Geiger–Müller tube based systems for detection of ionizing radiation. Morehead State University has developed the capabilities to design and characterize solid-state radiation detectors through the development of CXBN-2. CXBN-2 is the second in a line of CubeSat class satellites featuring a sophisticated Cadmium Zinc Telluride (CZT) based solid-state detector array aimed at measuring the diffuse X-ray background of the Universe. Leveraging these capabilities and advancements in solid-state detectors, Morehead State University is developing a low cost femto-class PocketQube satellite. The PocketQube will have an onboard solid-state radiation detector based on the RadiationWatch Type 5, a commercially available radiation detector based on the 10mm2 First Sensor X100-7 silicon-based sensor. The RadiationWatch Type 5 is a low power, low cost detector designed for use with a smart phone and proprietary software application as a dosimeter for those near the site of the Fukishima Daiichi nuclear disaster in Japan. Using custom software libraries and hardware configurations, this detector is being repurposed under the constraints of low power, low cost, small physical size, and quick design turnaround time for educational applications in primary schools and high altitude science experiments.

10:45 – 11:00 a.m. **ARLISS rocket project**

CS - 60

+Michael Robbins, Robert Twiggs, Mentor, **Department of Earth and Space Science, College of Science and Technology**

A Rocket Launch for International Student Satellites known as ARLISS is an event that is held each year in the Nevada Black Rock desert for students to fly payloads on high power amateur rockets. Aeropac, which is a northern California rocket club, sponsors this annual event since 1999. Students build small Coke can sized satellites and rovers that are carried to altitudes of approximately two miles and then return with the use of parachutes to the desert floor. The descent is designed to last approximately 15 minutes to simulate a horizon to horizon low orbit pass while students put processors, cameras, computers, and radios in these payloads and communicate with them during this time. Currently, Morehead State students are exposed to the design and construction of payloads that range from CXBN – 2 to Coke can sized projects, but do not have experience with launch vehicles. As such, the ARLISS rocket project is meant to bridge this gap while also being able to be used to launch our very own ARLISS payloads multiple times each year in Kentucky. In this project, students will utilize computer aided design software, simulation software, and apply this to the construction of their own rockets

11:00 – 11:15 a.m. **CXBN-2 science: Characterization of detector prototype and development of data analysis protocol**

CS - 61

****Biswas Sharma, Dr. Benjamin Malphrus and Dr. Thomas Pannuti, Mentors,*** **Department of Earth and Space Science, College of Science and Technology**

The cosmic X-ray background is one of the most interesting topics of observational astronomy and cosmology: its origin is not very well understood, and observations of the phenomena, hitherto, by various scientific missions have resulted in a discrepancy of its flux measurement. Morehead State University's Cosmic X-ray Background Nanosatellite-2 (CXBN-2) mission is dedicated to making a precise measurement of the cosmic X-ray background in the 20-50 keV energy range using its 2U CubeSat platform equipped with two Cadmium Zinc Telluride (CZT) detector arrays. The detector prototype is characterized in-situ at MSU Space Science Center using radioisotopes. A standard protocol for the analysis of the in-flight science data generated by the detector is also being developed in order to facilitate quick and easy study of the phenomena by the global astronomy community.

11:15 – 11:30 a.m. **Spacecraft environmental testing capabilities at Morehead State University**

CS - 62

***Murphy Stratton, Dr. Benjamin Malphrus, Mentor,* Department of Earth and Space Science, College of Science and Technology**

Morehead State University has developed the capabilities to design, manufacture, and test small form-factor satellites in-house at the university's Space Science Center. The environmental testing capabilities include a vibration testing system (shaker table), a thermal vacuum chamber, residual gas analysis, electromagnetic testing, and others. Our vibration testing system accommodates extreme test level requirements. The system is used in a variety of industries requiring high force/high acceleration/high vibration environments including the aerospace, satellite, communication, and space launch vehicle industries. The shaker table allows developers to test for vibration and PYRO shock susceptibility. Morehead State University has tested multiple satellites using this system including Kysat-1, Kysat-2, QubScout, Eagke-1, and UniSat-5. The Thermal Vacuum Chamber is a fully automated, hi-vacuum drying oven built to execute unique bake-out, out-gassing, and drying process. The system is ideal for space/flight hardware, connectors, or any vacuum process requiring vacuum in the "hi-vac" ranges between 1 x 10-4 to 10-7 torr. Our testing facility is ideal for small satellite payloads and allows us to have clientele who need effective, cost-effective proto-qualification space environment testing for their spacecraft.

11:30 – 11:45 a.m. **Morehead State University satellite mission operations**

CS - 63

***Sarah Wilczewski, Dr. Benjamin Malphrus, Robert Twiggs, and Bob Kroll, Mentors,* Department of Earth and Space Science, College of Science and Technology**

The Morehead State University Space Science Center operates several radio frequency antenna systems that are used for satellite mission support and for radio astronomy research. The antenna systems include a 21-Meter Space Tracking Antenna and several smaller Yagi Antennas. The antennas have been used to track many satellites over the years such as the Cosmic X-Ray Background NanoSatellite, Uni-Sat 5, KentuckySat-2 and several other satellites. The 21- Meter is able to track satellites in Lower Earth Orbit, Middle Earth Orbit, Geostationary Orbit and Lunar Orbits and operates in UHF, L-Band, S-Band, C-band, and lower X-Band. Yagi Antennas are used extensively in tracking satellites and operate in the UHF and VHF bands. One of our upcoming projects is CXBN2 which will be launched in November 2016 and will study background x-ray radiation. The ground segment is operated largely by Undergraduate Students who learn to track satellites with the Yagi Antennas and to gain experience and then ultimately operate the more sophisticated and capable 21- Meter. This research was funded with an undergraduate research fellowship.

11:45 – 12:00 p.m. ***Break***

Concurrent Session – Eagle Meeting Room

Moderator: Dr. Dora Ahmadi

8:30 – 8:45 a.m. **Mathematics lesson with combinatorial games**

CS ▫ 64

***Kansas Adams, Dr. Kathryn M. Lewis, Mentor*, Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

We explore a secondary mathematics lesson that includes variations of combinatorial games. The purpose of this research is to determine whether this lesson helps secondary students make connections involving higher-level mathematical concepts.

8:45 – 9:00 a.m. **Modeling and prediction of user behavior in mobile networks using data mining techniques**

CS ▫ 65

***Jonathon Byrd, Dr. Sherif Rashad, Mentor*, Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

The goal of this presentation is to demonstrate how user behavior in mobile networks can be modeled and predicted using data mining algorithms. We build an Android application that collects mobile user's features such as location, SMS/call data, application usage, and memory usage. The goal is to utilize these features to predict different profiles of mobile users. We study the importance of these features and we rank them according to usefulness in classifying different users. This mobile application and the proposed techniques have wide possible applications in mobile technology such as providing smart recommendations of software applications and new services based on preferences and location. The experimental results show that the proposed techniques are promising and it can be applied to build a behavior-based security system to detect intrusions and security threats to mobile devices. This research is funded with an Undergraduate Research Fellowship

9:00 – 9:15 a.m. **Night sky brightness in the Lexington and Morehead, KY areas**

CS ▫ 66

***Lauren Duffy, Dr. Jennifer Birriel, Mentor*, Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

Artificial light at night is a widespread astronomical and ecological problem. We use a Unihedron "Sky Quality Meter–LU–DL" (SQM-LU-DL) to collected data on nighttime sky brightness at several different locations in Lexington KY and Morehead KY. The SQM-LU-DL is a portable device that collects and stores data in its on-board memory chip. Data was collected at each site from sunset to sunrise for at least three consecutive nights. We perform a simple statistical analysis of this data and determine the minimum, maximum, and average values of night brightness for each location. As cloud cover has been shown to amplify the effects of light pollution, we also include nightly classifications of cloud cover in our data and determine the amplification factor of cloud cover for each night's data. We compare our readings to the nighttime brightness of a pristine nighttime sky as a way of quantifying "exposure levels" of "excess light at night". This work is funded by an MSU Undergraduate Research Fellowship.

9:15 – 9:30 a.m. **Analysis of nighttime sky brightness data from September 2014 to February 2015 in Morehead, KY**

CS ▫ 67

***Jessica N. Farrell, Dr. Jennifer Birriel and Dr. Ignacio Birriel, Mentors,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

The overuse use of artificial light at night is responsible for a pervasive astronomical and ecological problem known as light pollution. We collected night- sky brightness using a Unihedron Sky Quality Meter with Lens and Ethernet Connectivity (SQM-LE). The device we use to collected data is located within a weather-proof housing on the rooftop of Lappin Hall. Data were collected at five minute intervals from sunset to sunrise each night. We perform a simple statistical analysis of data from September 2014 to February 2015. Using MS Excel and its data analysis tools, we determine the daily minimum, maximum, and average values of nighttime brightness. Each night was classified as either cloudy or clear and lunar phase recorded. Based on average nighttime brightness, the darkest nights in Morehead during this time are found to be more than 4 times brighter than a pristine (unpolluted) night sky. We also examine the amplification effect of cloudy skies and ground cover snow. This research is supported by an MSU Undergraduate Research Fellowship.

9:30 – 9:45 a.m. **How much scientific knowledge pre-service teachers retained after completing a science methods course?**

Chosen for presentation at the 2015 Posters-at-the-Capitol

CS ▫ 68

***Joshua Fugate, Dr. Wilson González-Espada, Mentor,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

To identify whether students reached their educational goals, certain measurements must occur. Unlike the process of measuring physical objects, measuring abstract attributes, like learning, requires an indirect approach and using written tests. Item Response Theory (IRT) is a series of analyses aimed at improving the quality of written tests, including teacher-made ones. This study had two main goals: (1) to compare the retention of science content knowledge among pre-service elementary teachers after the completion of their science content sequence, before and after the science methods course, and (2) to identify test items that do not meet IRT guidelines. The IRT analysis included item difficulty, item discrimination, normalized gains, and distractor plots. It was found that, although pre- and post-test scores were statistically similar, item data suggested that many students were forgetting information over the course of the semester. In addition, about 6-8 items were flagged for further examination. By revising or removing said items, the reliability and validity of the diagnostic test will likely improve. This research was supported by an Undergraduate Research Fellowship from the Department of Mathematics, Computer Science and Physics, College of Science and Technology.

9:45 – 10:00 a.m. **Analyzing football overtimes**

CS ▫ 69

***Caleb C. Hinds, Dr. Christopher Schroeder, Mentor,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

A lot of effort goes into making sure that overtime periods give each team a fair chance to win the game. Recent rule changes in the NFL have been implemented to help ensure this is the case. We will look at mathematical models of the current and former overtime rules in the NFL and compare them to a model of college overtime rules to see which system is the most equitable for each team.

10:00 – 10:15 a.m. ***Break***

10:15 – 10:30 a.m. **Using IRT to analyze a physical science content test for pre-service teachers**

Chosen for presentation at the 2015 Posters-at-the-Capitol

CS ▫ 70

***Janie Knell, Dr. Wilson González-Espada, Mentor,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

Recently, results from the Program for International Student Assessment (PISA) suggest that, in the United States, school student performance in science and mathematics has moved from world-class to middle-of-the-pack. Teacher academic preparation and quality has been pointed out as one factor that must be improved for PISA scores to recover. At Morehead State University, the faculty revised several courses for teachers, including SCI 111 (an inquiry physical science course) to emphasize inquiry-based, hands-on instruction. After five years, we have enough data from the course's pre- and post-test diagnostic test to determine to what extent the revisions produced significant learning gains and to evaluate the diagnostic test using guidelines from Item Response Theory (IRT), such as test score distributions, item difficulty, item discrimination, and item distractor analysis. The two main findings were that (1) students demonstrated improved content knowledge in SCI 111, as measured by inferential statistics and normalized gains and (2) about seven test questions did not meet the minimum IRT quality requirements and were further examined for possible revision or deletion from the test. This research was supported by an Undergraduate Research Fellowship from the Department of Mathematics, Computer Science and Physics, College of Science and Technology.

10:30 – 10:45 a.m. **Equivalence numbers, graphs, and League of Legends**

CS ▫ 71

***Kristen Knight, Dr. Robin Blankenship, Dr. Doug Chatham, and Dr. R. Duane Skaggs, Mentors,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

Given a finite simple graph G, the equivalence number of G is the minimum number of unions of disjoint cliques needed to cover all the edges of G. We calculate the equivalence number for specific graphs, give some general bounds for the equivalence number of different classes of finite simple graphs, and describe some applications of the work. This research is supported by a Morehead State University Undergraduate Research Fellowship.

10:45 – 11:00 a.m. **Game Spark, a game engine**

CS ▫ 72

***Michael McGinnis, Dr. Doug Chatham and Dr. Sherif Rashad, Mentors,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

The goal of this project it to design and implement a new game engine called Game Spark. Game engines are used to help speed up the process of building a game. They hold many features, including methods to easily build levels, or scripting for more advanced components like custom AI. Game Spark is designed to be both powerful and easy to use. It will employ 2D game graphics, which allow for an intuitive approachable user interface. This game engine will also include a host of common features, such as level editing and scripting. Game Spark will fill the role of a casual game engine. Anyone who wants to try can make a simple game with game spark without devoting hours of his/her time. This software, once finished, will be free and open source.

11:00 – 11:15 a.m. **Inquiry physical science: Curricular comparisons and IRT analysis**

CS ▪ 73

***Andrea Wilhoite, Dr. Wilson González-Espada, Mentor,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

Current science education reform efforts emphasize teaching K-12 science using hands-on, inquiry activities. For maximum learning and probability of implementation, these instructional strategies must be modeled in college science courses for pre-service teachers. In the case of Morehead State University's inquiry physical science course, SCI 111, the instructor used two different curricula: "Physics for Everyday Thinking" and "Interactions in Physical Science". Although the same diagnostic pre- and post-test was used with both curricula, it is only now that we have enough student responses to validate the assessment using guidelines from Item Response Theory (IRT). The purposes of this research study were twofold. First, I compared students' pre- and post-test scores to determine what curricula produced the most learning, as measured by t-tests and normalized gains. Second, I calculated IRT parameters and performed distractor analyses to identify individual items that did not meet psychometric guidelines and that needed to be revised or removed from the diagnostic test. It was found that students performed slightly better with "Physics for Everyday Thinking". Between 5-7 items were flagged for further examination. This research was supported by an Undergraduate Research Fellowship from the Department of Mathematics, Computer Science and Physics, College of Science and Technology.

11:15 – 11:30 a.m. **Let's make a deal or no deal: The mathematics behind television game shows**

CS ▪ 74

***Andrea Wilhoite, Dr. Vivian Cyrus, Mentor,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

Game shows have been entertaining American households since the 1940s, intriguing listeners and viewers alike as they play along with the contestants. This project takes a look into the mathematics behind popular TV game shows, analyzing algorithms and probabilities that ensure the game has a profitable balance of winners and losers. Key topics that are researched in the project are the Monty Hall Problem in Let's Make a Deal, calculating the banker's offer in Deal or No Deal, and the roll the Monty Hall Problem plays in the final round of Deal or No Deal.

11:30 – 11:45 p.m. **Kaluza-Klein theory: An early approach for a Grand Unified Theory**

CS ▪ 75

***Erich Hohenstein, Dr. Capp Yess, Mentor,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

The Standard Model of particle Physics is our current theory to describe the building blocks of the Universe. I describe the fundamental particles and the forces through which they interact: the Strong, Weak, and Electromagnetic forces. It has been extremely successful predicting experiments, however it is an incomplete theory. It lacks of a description for certain phenomena we see in the Universe, such as matter–antimatter asymmetry, and the nature of dark matter and dark energy. It is therefore that physicists are looking for theories beyond the Standard Model. One of these theories is the Grand Unified Theory, which tries to unify the three forces of the Standard Model, leaving Gravity out. A theory that attempt to unify all the natural forces is called "Theory of Everything". Considering the importance of theories unifying forces, this research has the goal of studying an early attempt to unify the Electromagnetic force and the Gravitational force. Although, the Kaluza-Klein theory has been left behind by physicist as they look for more general theories, it is a usual starting point to introduce theories with higher dimensions such as String Theory.

Poster Session 1:15 – 3:00 p.m. Crager Room

P - 1

Finding character in our collections: Investigating Spanish-language library material

Crager

***Dakoda Trenary, Karla Aleman, Mentor,* Camden-Carroll Library, Caudill College of Arts, Humanities, and Social Sciences**

Central to a library's mission is the development and management of its collections, but learning a collection's strengths and weaknesses is often a difficult and time consuming task. In order to better connect patrons to the Library's resources, the Morehead State University Library began an in-depth, item-level collection assessment of the Library's literature and language collections. Employing the talents of five undergraduates to collect data and spot trends, the Library previously assessed the English-language and French-language materials. One MSU Honor student's new efforts this past year have focused on assessing Spanish-language material. This poster presentation will explore comparisons between English-language and Spanish-language material usage and will discuss new discoveries about the quality and age of the Library's Spanish-language material.

P - 2

Investigating county-level economic diversity in eastern Kentucky

Crager

***Donald James Burns, Dr. Christine Lange, Mentor,* School of Public Affairs, College of Business and Public Affairs**

Since 1965, the Appalachian Regional Commission (ARC) has worked to promote sustainable local economies throughout the region. However, despite these efforts, many counties, especially in eastern Kentucky, remain economically distressed. In response, the ARC has increasingly focused on fostering economic diversity to help improve county economic conditions, as greater diversity typically acts to buffer local economies in the face of economic downturns. This study examined economic diversity levels for selected counties in eastern Kentucky spanning a range of economic conditions. County economic diversity levels (industrial, functional, and occupational) for 2012 were obtained from the ARC's Economic Diversity Webtool. Data from the ARC's Distressed Counties program was used to determine county economic condition (status) between 1960 and 2012. Overall, results indicate that counties experiencing more economic progress over this period have somewhat greater economic diversity levels than other counties; however, no clear relationship exists between economic status and economic diversity for the study area. Additional data and in-depth case studies are needed to provide improved insights into the complex problem of persistently distressed counties in eastern Kentucky, and to assist strategic community planning efforts to develop more robust local economies. This research was funded by a MSU Undergraduate Research Fellowship.

P - 3

Bike friendly Morehead

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Johnathan Coleman, Kelsey Estep, Tinsley Setters, April Haight, Mentor,* School of Public Affairs, College of Business and Public Affairs**

Students enrolled in Regional Issues Seminar worked in partnership with the Morehead Tourism to educate local citizens and college students about the outdoor recreation opportunities within Rowan County. After meeting with Morehead Tourism, the students developed a plan to promote the Trail Town initiative. Research areas included bicycle safety, policy, marketing, and health and economic benefits. Best practices were researched to promote the assets of Trail Towns to encourage involvement and awareness throughout the community. The results demonstrate that bicycle tourism provides viable economic and health benefits to the community. Utilizing research and information provided by Morehead Tourism, the class identified grant proposals to promote Morehead as a bicycling destination. This project was funded by the Appalachian Regional Commission and supported by Morehead Tourism.

P - 4

Federalism and the regulation of sin: Intergovernmental regulatory power and the constitution

Crager

***Madyson Elizabeth Hutchinson, Dr. Michael W. Hail, Mentor,* School of Public Affairs, College of Business and Public Affairs**

This study examines the changes to sovereignty for the States as the nation transitioned to a regulatory state from a period of decentralized dual federalism to the present co-optive federalism. Specifically, there is an examination of federalism and the regulation of "sin" or moral-based policymaking at the local level and then working through the state and national levels. Regulation of sin implies governments are systematically removing and instituting certain moral practices that they deem to be intolerable or allowable. This research will discuss moral issues, such as alcohol sales and use, that make their way into the culture of our cities, counties, states, and nation. Central questions explored are those of government authority and constitutionality for regulation of moral issues under U.S. federalism.

P - 5

Countercyclical spending, fiscal responsibility and the American Recovery and Reinvestment Act of 2009

Crager

******Ryan Yoder, Dr. Jonathan W. Pidluzny, Mentor,* School of Public Affairs, College of Business and Public Affairs**

This project evaluates the American Recovery and Reinvestment Act of 2009 (ARRA)—popularly known as "The Stimulus"—by analyzing its economic impact in three important sectors: education, healthcare, and infrastructure. How did the ARRA prioritize its spending? Which sectors of the economy saw the highest rates of job creation, which received the most government funding, and how was spending distributed in geographical terms? The project also examines the broader impact of the ARRA on the US economy in terms of its impact on interest rates, GDP growth, and debt accumulation. The project, generously supported by an Undergraduate Research Project, concludes with an assessment of the viability of Keynesian-style counter-cyclical spending in the 21st century.

P - 6

Federalism and intergovernmental relations: Examining the organization of the Kentucky Department of Local Government and the relationship with local government

Crager

***Ashley K. Taulbee, Dr. Michael W. Hail, Mentor,* School of Public Affairs, College of Business and Public Affairs.**

Kentucky re-classified local governments in the last session of the General Assembly. This continues a trend whereby Kentucky has experienced several changes in governmental policies and infrastructure and how the executive branch manages local government relations. This research seeks to explore the effects of these changes and the "home rule" approach in the recent case. These will be assessed comparatively within the U.S. system of federalism.

P - 7

Leveraging social media to support management education and develop social media self-efficacy

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Allison L. Becknell, Dr. Johnathan K. Nelson and Samuel Stapleton, Mentors,* School of Business Administration, College of Business and Public Affairs**

Instructors can utilize social media, such as LinkedIn, to help students prepare to enter the workforce and achieve professional advancement. The increasing use of social media in business makes it important for students as current and future employees to be knowledgeable of how to use social media. Because of the potential benefits of using social media for students, instructors are beginning to incorporate social media into their teaching. However, the great number of social media platforms with their inherent strengths and weaknesses make it difficult to determine exactly how to incorporate social media into instruction. Data from students in two different management courses was collected on a two-part social media assignment using LinkedIn; a survey was administered before and after this social media based assignment was completed. We observed an increase in student social media self-efficacy and an increase in attitudes towards using social media for learning over the course of the semester. Students also reported that they felt the social media based assignment helped them learn course content. These results can guide efforts for using social media to advance learning in the classroom and prepare students for future careers. The MSU Undergraduate Research Fellowship program supported this research.

P - 8

Business students' perceptions of expected skills and traits for their professional success

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Andrew Blevins, Dr. Steve Chen and Dr. Janet Ratliff, Mentors,* School of Business Administration, College of Business and Public Affairs**

Growing literature in Business reveals concerns about the quality and level of preparedness of business students entering the business industry. This study focused on the competencies, skills, and traits business students perceived as important for being a successful employee. One hundred and seventeen student-participants from four business classes at a regional state university in Eastern Kentucky were randomly recruited to complete a 60-item survey. Participants rated the importance of traits and qualities as well as academic knowledge/subjects. The results indicated that participants categorized various traits and qualities of successful business professionals, suggested by experts and scholars (American Laundry News, 2012; Kavanagh, & Drennan, 2008; Kesner, 2008; Hall et al, 1995) into eight constructs. Students rated personal principles such as work ethic, dependability, and willingness to learn highly, but they failed to recognize the importance of having internship experience and developing strong writing skills. Students also tended to highlight the importance of the academic subjects "business ethics" and "marketing & entrepreneurship." This finding seemed to be synchronized with findings of past studies (Wardrope, 2002). In conclusion, this study addresses ways to utilize these findings to revise business curriculum and improve the skills and knowledge of students.

P - 9

What can be learned from students who are studying a targeted international curriculum and traveling abroad?

Crager

*_Waylan Coffey, Dr. Janet Ratliff, Mentor,_ **School of Business Administration, College of Business and Public Affairs**

This pilot study involves a preliminary evaluation of pre/post surveys, to analyze content and perspectives related to an international experience in Italy and Greece. Data for the study was gathered from Morehead State University students taking an international business course and traveling abroad in the spring of 2014. The study was conducted to effectively measure and assess an international course curriculum and its overall effect on student knowledge and perceptions about traveling abroad. Students were exposed to an international curriculum related to Italy and Greece that concluded with a two-week international experience in these countries after the completion of the course itself. The purpose of this study is to ultimately determine whether or not college students changed their knowledge of and perceptions about traveling abroad after being exposed to an appropriate curriculum and an international experience. MSU Undergraduate Research Fellowship sponsored this research.

P - 10

Impact of previous playing experience in coaching basketball

Crager

***_Tyler Davis, Brandon Walker, Dr. Steve Chen, Mentor,_ **School of Business Administration, College of Business and Public Affairs**

Numerous professions, such as law, education/teaching, business and medical practices, have a specific academic discipline and curriculum that train and prepare their future professionals ready for their career. However, in the field of sport coaching, the importance of past playing experience alone seems to outweigh any other forms of educational training. This study examined the impact of professional playing experience on the success and hiring of NBA head coaches. Career coaching records of 130 Eastern Conference NBA coaches from 1980 to 2013 were analyzed. The statistics revealed that 47% of coaches were former NBA players. Coaches who are former NBA players (n = 61) have a slightly higher winning percentage (about 2%) than the non-player coaches (n = 69). Despite the winning percentages of the two groups of coaches being similar, each former-player with a coaching position got to coach at least 100 games more than a non-player coach on average. Coaches with a better playing career did not exhibit a higher winning percentage than those non-players did. The results seemed to insinuate that there is a need for athletic administrators to evaluate the coaching candidates based on educational background and professional training instead of playing experience alone.

P - 11

Cost/benefit analysis of college: The impact on student attitudes and behaviors

Crager

***_Olivia Hazel, Alex Tachovsky, Dr. Kenneth Henderson, Mentor,_ **School of Business Administration, College of Business and Public Affairs**

Tuition cost and other college expenses are rising. Two of the largest contributing factors are decreases in government funding and increased demand. This has been debated by institutions, government, and scholars but there is a lack of academic literature on the topic. This study identifies the impact the cost/benefit ratio of attending college has on the attitudes and behaviors of students. Specifically, it defines the cost/benefit ratio, illustrates how students perceive the costs and benefits, and shows how they behave as a result. The behavior portion was addressed through GPA analysis. This study utilizes a pluralistic approach. Focus group participants included both males and females from 2-year and 4-year colleges of all ages, areas of study, and year in college. The focus groups provided rich discussion and helped to distinguish patterns that led to the formation of the research hypotheses and helped develop a survey about the cost/benefit ratio. The findings of this study surprisingly suggest that 2-year students and 4-year students display similar attitudes and behaviors relating to the cost/benefit ratio. This was a class project for the class of Marketing Research taught by Dr. Kenneth Henderson and was presented at the ABR conference in New Orleans.

P - 12

Determinants of financial responsibility: A study of university students

Crager

***Olivia Hazel, Dr. Ali Ahmadi, Mentor,* School of Business Administration, College of Business and Public Affairs**

Financial responsibility is a well-studied topic that has merits in the field of marketing. In addition, it can provide valuable information for many businesses. Financial responsibility implies knowing how and when to make smart financial decisions and be able to be held accountable for poor actions. While everyone is subject to varying degrees of financial responsibility, college students are one of the most susceptible groups to erratic financial responsibility levels. This quantitative research studied the dependent variable, financial responsibility level, against the independent variables of gender, number of credit cards held, past work experience, and year in college. Each of these independent variables has been previously considered by other researchers. These studies have cited varying opinions and results. Undergraduate students were consciously surveyed and raw data was converted to provide meaning and deliver a valuable analysis.

P - 13

Moral indignation: A model of anger expressions in response to unethical behavior

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Lucas Taylor, Dr. Johnathan Nelson, Mentor,* School of Business Administration, College of Business and Public Affairs**

Ethics scandals in organizations have brought attention to the need for ethical leadership—leaders who exhibit integrity and promote ethical behavior in others—to foster workplace ethical behavior. While ethical leadership has been identified as an influence on ethical behavior, we do not fully understand the role of emotional displays in ethical leadership. Understanding the role of emotional displays in ethical leadership may help leaders respond to and prevent unethical behavior. Typically anger, a powerful emotional display is viewed as a negative emotion, but research suggests that anger expressions can sometimes have positive benefits. To better understand outcomes of anger expressions and their implications for managing ethical behavior, we reviewed literature, examining anger in organizations, including positive and negative outcomes associated with anger expressions. Based on this literature review, we developed a conceptual model explaining the role of moral indignation in response to unethical behavior. Our model identifies when anger expressions are most likely to contribute to positive outcomes in ethical behavior. Based on this model we describe future research and organizational implications and make recommendations for how anger expressions can be used to manage ethical behavior in preventing future ethics scandals. MSU Honors Undergraduate Research Fellowship supported this research.

P - 14

Engaging and increasing university athletics fan-base

Crager

***Kyle Nakama, Victoria Cable, Mentor,* School of Business Administration, College of Business and Public Affairs**

Through a yearlong internship with the Morehead State University Athletics Department, a variety of marketing strategies were implemented to gain recognition of university sporting events. Previous knowledge of these tactics was attained in the traditional classroom setting, while application was presented in hands-on situations. In-game promotions and sponsorship fulfillment requirements accounted for additional value for the typical athletics fan. Student attendance and trends were monitored and analyzed through mobile app implementation, and valuable insight was gained.

P - 15

The importance of daily vocabulary instruction in today's classroom

Crager

***Amanda Andrews, Dr. Kimberely Nettleton, Mentor,* Department of Early Childhood, Elementary, and Special Education, College of Education**

The connection between vocabulary and reading comprehension has been the subject of much scrutiny. Focusing on the MAP scores of a sample 4th grade classroom from a local elementary school, identified areas of student deficits were Vocabulary and Comprehension; with 31% of the students scoring below benchmark. Vocabulary strategies were implemented and students' weekly performance was tracked over time and compared to reading comprehension test data. This project was made possible by the help of a local school and teacher.

P - 16

Does positive reinforcement support behavior change in the classroom?

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Jerrica Ashley, Samantha Howard, Dr. Kimberely Nettleton and Dr. Daniel Grace, Mentors,* Department of Early Childhood, Elementary, and Special Education, College of Education**

Students sometimes arrive at schools with behaviors that need to be changed. After identifying students in four elementary classrooms, an action research case study focused on targeted behavior intervention was initiated. Using positive reinforcement and fixed interval monitoring, the effect of the interventions was recorded. The data gathered during the action research project provides insight into the effect of a positive reinforcement program on student classroom behaviors.

P - 17

Getting attention: There is a right way and a wrong way

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Bethany DeMoss, Dr. April D. Miller, Mentor,* Department of Early Childhood, Elementary, and Special Education, College of Education**

We examined the effects of several interventions on the classroom behavior of a first grade, male student. The purpose of this study is to determine the function of this child’s behavior, link it to home situations, and to reverse the child’s behavior to create a better classroom environment for this student and all other peers in this first grade classroom. To determine the function of inappropriate attention-seeking behaviors, it was important to link inappropriate behaviors occurring in the classroom to the weeks the student was in different home situations. Then by determining the function of the male student’s inappropriate behaviors, we could work to replace those inappropriate behaviors with more appropriate attention and attention-seeking behaviors. The student behavior changes required several intervention strategies in order to reduce the inappropriate behavior. The results were analyzed and reported to the teacher, the parents, and in this case study.

P - 18

How solo piano music affects third graders' on task behavior

Crager

Rachael Durbin, *Brittany Hoersting, Dr. Kimberely Nettleton, Mentor,* **Department of Early Childhood, Elementary, and Special Education, College of Education

Many students have difficulty staying on task while working independently in the classroom. Seeking to motive student learning in the classroom and decrease time-off task during independent work, the effect of solo-piano background music during independent learning time was examined. Third grade students in two classrooms were allowed to listen to music during their independent work time. Off-task student behavior data was collected at fixed intervals during a four week period. A significant increase of on-task behavior in both classrooms while playing the solo piano music.

P - 19

The effectiveness of co-teaching vs. traditional teaching

Crager

Jessica Haas, Dr. Kimberely Nettleton, Mentor,* **Department of Early Childhood, Elementary, and Special Education, College of Education

This research project tested the effectiveness of co-teaching vs. traditional teaching in the classroom. The study examines if co-teaching is a beneficial factor to student learning when compared to having one teacher in the classroom. The study was conducted in two elementary classrooms; one with a co-teacher and the other without a co-teacher. The data supports co-teaching as an effective strategy to support student learning.

P - 20

Multiple case studies on the effects of positive rewards in the classroom

Crager

Megan McClain, *Holly Tilley, Dr. Kimberely Nettleton and Dr. Daniel Grace, Mentors,* **Department of Early Childhood, Elementary, and Special Education, College of Education

The effects of an individualized positive reward system in the classroom combined with a negative token economy form of classroom management was examined. Based on observed classroom behaviors, three students were selected to participate from two upper elementary classrooms. The targeted behaviors included inattention, academic readiness, organization, and motivation. The researched investigated whether a reduction in the amount of classroom behaviors exhibited could be achieved using a positive and personalized manner. Rowan County Schools, specifically Clearfield Elementary School, supported this project.

P - 21

Legs and literacy

Crager

Cierra Thompson, *Sydni McLane, Dr. Mee-Ryoung Shon, Mentor,* **Department of Early Childhood, Elementary, and Special Education, College of Education

Howard Garner's theory of Multiple Intelligence denoted "Kinesthetic Intelligence" as one of the ways for human beings develop understanding around the world. In respect to the characteristic of young children's learning methods, "learning through play", this research has investigated how physical activities affect and enhance literacy development in young children. A Series of comprehensive activities that incorporate literacy skills with movements, were embedded in the preschool classroom, formed with three and four year olds Louisville area. Teacher-led whole group movement activities were integrated into the regular preschool center activities such as puzzle, play dough, stencil painting, and magnet letters, etc.

This study was made possible with the funding of Undergraduate Research Fellowship Program from RCPC.

P - 22

The effect of lighting on listening comprehension in elementary students

Crager

***Holly Wells, Meghann Edlund, Bethany DeMoss, Dr. Kimberley Nettleton, Mentor,* Department of Early Childhood, Elementary, and Special Education, College of Education**

More and more in today's teaching environment, students are learning in the dark. Increased use of technology is requiring lowered light levels, which impacts the classroom environment. Whether or not students' retention of information is greater because of the darker light levels, is a topic which has not been well-researched. This research project investigated how the light level affects students' listening comprehension. Student data was collected from both upper and lower elementary classrooms. By understanding how the level of light affects listening comprehension, teachers can improve instruction. The data collected in this research was possible with the support of the Rowan County School system.

P - 23

Using Blackboard Collaborate to teach students across the State of Kentucky

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Holly Wells, Dr. Sarah Hawkins-Lear, Mentor,* Department of Early Childhood, Elementary, and Special Education, College of Education**

A research study was conducted to examine the effects of using Blackboard Collaborate to teach special education college courses to undergraduate and graduate students across the state of Kentucky. Blackboard Collaborate is a seemingly new way to teach students using technology. With Blackboard Collaborate, the students participate in the class session during a synchronous meeting time, while on-line. This poster presentation has implications for rural special education due to the delivery of content the professor is using to teach students in rural eastern Kentucky. Now, instead of students driving over 2 hours each way to take a course, they can participate in the course from the convenience of their homes or regional college campus. A survey was administered to three undergraduate/graduate courses and the results were positive. The majority of students liked this type of instruction and would like more courses to be offered in this format. Not only can Blackboard Collaborate be used to deliver special education content material, but other disciplines can use the same delivery method to teach their specific content area. This research was funded with an Undergraduate Research Fellowship.

P - 24

Pathway to teacher education programs (TEP) in South Korea

Crager

***Jimin Yoon, *Nuri Kim, Dr. Mee-Ryoung Shon, Mentor,* Department of Early Childhood, Elementary, and Special Education, College of Education**

Korean students' outstanding performance in academic skills has been acknowledged by media, public speech by education administrators as well as the data published by the Program for international Student Assessment (PISA) 2012 report. However, little investigation has been carried out about the P-12 education curriculum as well as the teacher education programs, which contributes to the student's academic performances in South Korea. Therefore, the purpose of this study is to introduce the systematic procedures involved in the selection of high quality teacher candidates through three stages; acceptance in the Teacher College, Program Curricula, and the annual national Teacher Certification Exam administered by the Korean Ministry of Education. These three steps weed out teacher candidates before college admission, during teacher education programs, and after college graduation for the successful achievement of teaching certificate. This study also uncovers two unique teacher education program structures in Korean Education, P-5 program and middle/secondary education program. Data analysis retrieved from Korean Ministry of Education, Statistics Korea, and interviews of teacher candidates in Teacher's college were conducted.

P - 25

PPN: Preparing teachers through school partnership

Crager

***Courtney Beaton, Dr. Lesia Lennex, Mentor,* Department of Middle Grades and Secondary Education, College of Education; *Dr. Kimberely Nettleton, Mentor,* Department of Early Childhood, Elementary, and Special Education, College of Education**

The Professional Partnership Network (PPN), a three-semester experience pairing experienced classroom teachers with P-5/Special Education teacher education candidates. Candidates progressively increase their responsibilities in the classroom while enrolled full-time in coursework. This study consisted of analyzing four years' data with five complete cohort groups (N= 99) on (1) differentiated types of independent teaching within each block of the cohort, (2) differentiated methods of co-teaching within each block of the cohort, and (3) reflective feedback regarding experiences in the third block of cohort. Respondents mainly reported teaching to small groups (N=11) in first semester of PPN compared to teaching in whole group, tutoring (N=14) and small group, transitioning to other subjects (N=17). Most interesting was the increase in co-teaching. From first block to third block nearly tripled with PPN candidates assisting with teaching. Reflections from third block mentor teachers indicated their enthusiasm with the PPN in preparing classroom teachers. PPN candidates echoed this enthusiasm and indicated that they felt more prepared for effective classroom management and preparing lessons. These three semesters are completely changing the preparedness of the soon-to-be teachers, getting them more ready to handle their own classroom. An Undergraduate Research Fellowship through the Honors Program funded this research.

P - 26

Technology in Kentucky social studies classrooms

Crager

***Andrew T. Perrin, Dr. Lesia Lennex, Mentor,* Department of Middle Grades and Secondary Education, College of Education**

Technology has become an ever-present part of our world. The use of technology has many applications, including in the field of social studies education. This study focused on how technology is being used in Kentucky social studies classrooms and its perceived classroom effects. Using SurveyMonkey, social studies teachers grades 5-12 in 65 of Kentucky's school districts were asked what technologies they used in their classrooms. The survey had a 17% return from teachers. Survey results indicated that teachers most often used videos, apps, and websites. The main reasons for using technology are testing, student research, content review, and interactivity. Teacher and student enjoyment for using technology and improved student performance are the main triumphs. The main challenges to technology use are lack of technology in student's home, weak school technology infrastructure and/or lack of equipment, and students being off-task when engaging with technology. This research was made possible by an Undergraduate Research Fellowship through the Honors program.

P - 27

Trends in stakeholder's perceptions of Mason County's 1:1 iPad Implementation

Crager

***Maria Leanne Kallas, Dr. John Curry, Mentor,* Department of Foundational and Graduate Studies in Education, College of Education**

In 2012, Mason County High School, located in Maysville, KY, launched a 1:1 iPad implementation. All faculty, staff, and students were given iPads to use for both school and personal use. According to Forbes, at its debut at the start of the 2012-2013 school year, this 1:1 iPad implementation was ranked eighty-ninth largest in the world. This presentation will examine the qualitative data collected this year. The data point included examines the 1:1 implementation through a Diffusions of Innovation theoretical framework. The methodology is a stakeholder-based evaluation that will focus on administration, students, and early responders. This research is sponsored by Morehead State University's College of Education through the Undergraduate Research Fellowship Program.

P - 28

Creating the mountain to mountain children's book

Crager

***Abigail Baggett-Oney, Dr. Joy Gritton, Mentor,* Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

This project represents a collaboration between the Haldeman After School Program, the MSU Appalachian Studies interdisciplinary program, and the University of Kentucky Appalachian Center to produce a bilingual children's book resulting from an exchange between children participating in the after school program and those attending school in Rumi Cruz, Ecuador. The book is designed to help children in Andean Ecuador and Appalachian Kentucky learn about another culture and language, and includes original artwork, the children's drawings and letters, easy-to-read text, and learning activities. Ultimately the goal is to foster mountain-to-mountain cross-cultural understanding and friendships. This research was funded with an Undergraduate Research Fellowship.

P - 29

Ceramics facility management focusing on kiln maintenance and gas reduction firing

Crager

***Jennifer M. White, Seth J. Green, Mentor,* Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

Proper safety procedures are essential in maintaining kiln firings in order to produce an attractive final product and continued longevity of the kiln. Firing a gas kiln is a timely process which entails hourly monitoring (approximately 8 hours) of the kiln's internal atmosphere including temperature, pyrometric cone packs and glaze maturation. Based on the information gathered during hourly monitoring, adjustments to natural gas burners and the damper need to be made in order to maintain a neutral, oxidizing, or reducing internal atmosphere as desired. In reduction, oxygen is limited causing a combustion atmosphere in which an excess of carbon combines with oxygen creating carbon monoxide. The clay bodies and glazes contain metal oxides, which are released through the heating process bonding with carbon monoxide molecules converting them back to their natural state of carbon dioxide. The reduction process is maintained until desired temperature and glaze maturation are reached at which time the gas is turned off and kiln is left to cool (approximately 18 hours). This research was supported by the MSU Undergraduate Research Fellowship.

P - 30

Strategizing for career success in the general education communications course

Crager

***Hope Mills, Dr. Janet Rice McCoy and Randy Manis, Mentors,* Department of Communications, Media, and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences and *Mike Esposito, Mentor,* Office of Career Services**

In Fall 2014, the students in one section of COMS 108 "Fundamentals of Speech Communication" completed assignments focusing on career development including: (1) an informational interview with a career professional; (2) a mock job interview; and (3) a series of quizzes using the webpages from the Office of Career Services as the text. Twenty-six students were enrolled with 24 freshman and two sophomores. The instructor designed the course so students would start thinking about their career after graduation as soon as they arrived on campus. In addition, the instructor wanted students to begin identifying and building communication and other "soft" skills employers expect in the 21st century. Essay questions on the mid-term and final exams were used to evaluate the course implementation and design. These questions were: (1) "Why is it important for college students to have an internship before graduation? (2) "While in college, what things can you do to further one's career success after college?" A textual analysis of the data indicates students are thinking about their careers and the steps needed to reach their career goals. As freshman and sophomores, they were mostly concerned about their capability and probability of getting jobs in their chosen fields.

P - 31

Planning and implementing a regional engagement conference for higher education personnel

Crager

***Paige Mathis, Randy Manis, Mentor,* Department of Communication, Media and Leadership Studies, Caudill College of Arts, Humanities and Social Sciences and Center for Regional Engagement**

In November 2014, the ninth annual Kentucky Engagement Conference was held on the campus of Morehead State University. The conference theme, "Productive Partnerships through Stewardship and Engagement", focused on the need for citizens to build connections with one another and with community organizations in an effort to move our communities forward. To build a foundation for the event, the student fellow reviewed materials from previous Engagement Conferences. Under the guidance of the host committee at the Center for Regional Engagement, the fellow was responsible for several facets of the conference, including, but not limited to: (A) contacting Kentucky Proud vendors in order to gather products for giveaways; (B) arranging for community partners to attend and set up tabletop presentations; (C) creating a logo to be used on promotional products for the conference; (D) attending the event in order to complete any other needed duties; (E) administering an online survey post-conference to determine participant satisfaction of the event; and (F) tabulating and analyzing the data received from the survey. This research was supported by the MSU Center for Regional Engagement.

P - 32

Prosodic boundary tones and conjunction effects

Crager

***Blake Clark, Dr. Katy Carlson and Dr. Joseph C. Tyler, Mentors,* Department of English, Caudill College of Arts, Humanities, and Social Sciences**

Both prosodic boundary tones (H%, L%) and the conjunction and affect relationships between what has been said and what comes next. We hypothesized that H% and and would have similar effects on continuations, shown in the syntactic category and size of upcoming material, and on discourse coherence relations. In an auditory completion study, 36 participants listened to single-clause stimuli and typed whatever they thought would be a good continuation. Critical items on the list varied in final boundary tone (H% or L%) and presence or absence of and. We found that both and and H% led to more closely related material in continuations. H% and and both led to fewer words and more VPs (vs. clauses). Result coherence relations were most common (39%), especially in full clause completions and after H% or and. Narration relations were more common after L% and without and, while Commentary relations were more common after L%. Overall, material following H% or and is treated as more closely related to preceding content than material after L% or without and. We suggest that H% could be seen as an intonational conjunction. This research was partially supported by NICHD R15HD072713 and NIH 5P20GM103436-13 grants.

P - 33

The potential for using small-group, peer-led discussions to foster literary analysis skills among struggling high school readers

Crager

***Zachary Cole Allen, * Samantha Haas, Dr. Alison Heron Hruby, Mentor,* Department of English, Caudill College of Arts, Humanities, and Social Sciences**

The purpose of this qualitative study is to capture how an experienced English teacher plans class discussions for high school students who are significantly behind in reading. Large-scale studies of successful middle and high school language arts instruction have demonstrated that discussion is an effective method for fostering reading and writing skills among all levels of students, including struggling readers. The present study will provide researchers and classroom teachers with insight into how a skilled teacher and her three collaborators (a teacher educator and two pre-service English teachers) plan discussions aimed at her students' literacy growth. At this time, there are no published studies available that specifically address how English teachers plan discussions for students who read below grade level. Moreover, there is little research on how struggling readers use discussion to understand works of literature. This study is funded by a MSU internal faculty research grant.

P - 34

Focus drives accent attachment effects

Crager

***Dallas Cox, Dr. Katy Carlson and Dr. Joseph Tyler, Mentors,* Department of English, Caudill College of Arts, Humanities, and Social Sciences**

In syntactic processing, attachment is linking upcoming words to the current syntactic structure. We found that accents drew the attachment of phrases in three different structures, and that the focus provided by a preceding wh-question did too. An auditory questionnaire preceded sentences like "Alison entertained a toddler with many toys" with different wh-questions: "What did Alison do?" (Verb focus) or "Who did Alison entertain?" (Noun focus). The wh-questions were recorded by a different speaker from the answering sentence, which could mean that Alison used toys to entertain the child (the verb attachment answer) or that the toddler had many toys (the noun attachment answer). The Verb focus question led to 12% more verb attachments than the Noun question. This effect is comparable to that produced by contrastive accents on the Verb or Noun itself. The finding that accents affect attachment in several structures augments the usual view of pitch accents affecting processing. Finding that a wh-question had the same effect suggests that focus, and the increased semantic processing it demands, affects decisions about basic syntactic structure. This research was partially supported by NICHD R15HD072713 and NIH 5P20GM103436-13 grants.

P - 35

A study of student writing performance in Eastern Kentucky

Crager

***Megan Ison, Emily Holley, Sarah Woodall, Deanna Mascle, Mentor,* Department of English, Caudill College of Arts, Humanities, and Social Sciences**

While writing continues to be an essential skill for success and while tremendous advances have been made in our understanding about the best practices for teaching writing, students continue to struggle as writers and schools struggle to support their student writers. This project is the first step in a multi-phase research project to study the impact of the Morehead Writing Project on the teachers and students of Eastern Kentucky. Both nationally and within Kentucky, research has proven that National Writing Project professional development has a powerful impact on classroom teaching and the writing performance of NWP-trained teachers. However, until now, we have not studied the impact of the Morehead Writing Project on the student writers of our region. For this phase of the project, we have mined existing databases, specifically the Kentucky School Report Card and United States Census Quick Facts, to learn more about student performance on K-Prep writing exams and the correlation with specific demographic information, including household income and community education levels. This study will provide important information about teaching writing in our region. This research was supported by MSU Undergraduate Research Fellowship, Regional Engagement Fellowship, and the Morehead Writing Project.

P - 36

Issues on women's reproductive rights, 1980-1989

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Chelise Conn, Dr. Alana Scott and Dr. Kristina DuRocher, Mentors,* Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

During the late 1970s and early 1980s, employers, such as General Motors, St. Joe's Minerals, Allied Chemicals, Olin, and B.F. Goodrich, adopted "fetal protection policies" that banned certain women from jobs that involved toxic chemicals. Frequently women had to be sterilized or risk being fired or demoted. They gave employers incentives not to hire women, thus women opposed them as a form of sex discrimination. Scholars have failed to give significant focus to such reproductive trends, such as teenage pregnancy and fetal protection policies, thus limiting the significance of these trends in the larger historical context. By examining 1980's culture, reproductive politics and employment policies in relation to women's rights, one could conclude that sterilization abuse was still a societal concern, the political debate over teenage pregnancy was a rhetorical surrogate for the larger issue of the "underclass" and fetal protection policies were a backlash to gender equality.

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Born from fire: How Morehead State University rose from bloody origins

Crager

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

This presentation will discuss the early history of Morehead State University, specifically examining the period from its origins in the late 1800s to when it was taken over by the state in 1922. The discussion will be aided with the use of materials, such as photographs, from the MSU Archives. It will start with the small family-based civil war that occurred in Rowan County in the 1800s and how that conflict inspired missionaries to eventually create a place for Christian education in the area, and move on to overview how this initially small institution gained enough influence to be taken over by the state and be made one of Kentucky's most notable sources of higher education.

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The history behind Morehead State University's buildings and the architectural styles used

Crager

***Madeline Hieneman, Dr. Alana Scott, Mentor,* Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

This research will focus on the historical significance of Morehead State's buildings and how architectural styles have evolved at the university since the beginning of the school in 1887 to the present. With over fifty buildings on campus, each building's design reflects the popular architectural styles at the time it was constructed. This presentation will emphasize certain historic buildings, such as Fields Hall, Breckenridge Training School, Rader Hall, Camden-Carroll Library, the President's House, Button Auditorium, and Allie Young Hall. Buildings that were constructed in the mid to late 20th century, such as the Mignon Complex, Alumni Tower, and the Adron Doran University Center, will also be a part of the presentation. This research will be used for a documentary on the history of Morehead State University.

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You have the right to remain silent: Increasingly harsh trends in national school disciplinary practices

Crager

***Alex Kubala, Kelly Collinsworth, Mentor,* Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

After surges in school violence and the implementation of the Gun Free Schools Act of 1994, schools have tightened campus security and explored new ways of ensuring a safer learning environment. Zero tolerance policies gained popularity in the 1990s and spread to school districts all over the United States as an effort to deter crime and remove disruptive and violent children from the school system. There was also a national increase in the number of school resource officers stationed at schools, which allowed them to become more involved in school discipline routines. These two trends in disciplinary policy have generated controversy and lack conclusive data to prove their effectiveness in reducing juvenile recidivism and on-campus crime. School resource officers and zero tolerance policies can also create unintended consequences for students. The purpose of our research is to demonstrate that these increasingly strict trends raise concerns for the protection of juveniles' constitutional and due process rights, particularly regarding school interrogations and the application of zero tolerance for minor offenses and disciplinary problems. This research was funded through the Undergraduate Research Fellowship.

P - 40

North Vietnamese propaganda: The fight against imperialism

Crager

***Alex Kubala, *Jordan Boone, Keisha Burke, *Lizzy Snowden, Dr. John Ernst, Mentor,* Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

After American soldiers landed in Vietnam in 1965, the war between the North Vietnamese communists and South Vietnam's democratic government escalated to unprecedented levels. As an opponent to the spread of communism, the United States supported the South's efforts to install democracy, and believed that if Vietnam became communist then the rest of Southeast Asia would also fall to communism. The North Vietnamese nationalists implemented many methods to win the war in Vietnam, such as guerilla tactics and conducting logistical operations along the infamous Ho Chi Minh Trail. The North Vietnamese also produced highly successful propaganda. This research shows that the North Vietnamese wartime propaganda utilized nationalism to successfully spread communism, create support for the unification of Vietnam, and fuel the initiative to establish independence.

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The Rape of Nanking: The undeniable truth

Crager

***Jessey C. Reed, *Angelica Howard, *Todd Dewoody, Wade Skaggs, Chelise Conn, Dr. John Ernst, Mentor,* Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

During the Second Sino-Japanese War, the Chinese capital of Nanking fell to Japan on December 13, 1937, after a thirteen day siege. After the city's capture, the Japanese carried out a series of atrocities against Chinese civilians and POW's. Lasting over the next six weeks, these atrocities became known as the "Rape of Nanking." Estimated death tolls vary between 40,000 and 400,000. The Chinese assert that 300,000 men, women, and children were mercilessly and systematically killed by the Japanese. These atrocities, sanctioned by the military high command, included mass murders, killing contests, living burials, mutilations, and instances of brutal rape. By examining surviving Chinese accounts, one can expose the extent and depth of the atrocities committed. Japanese accounts of what happened in Nanking, however, either justify or refute the occurrence of the atrocities and to a certain extent deny that the massacre ever occurred. An analysis of firsthand accounts reveals an excessive number of casualties and the methods used to carry out the killings during the Rape of Nanking.

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A student's perspective on volunteerism, service-learning, and internships

Crager

***Paula Jo Roberts, Kelly Collinsworth, Mentor,* Department of History, Philosophy, Religion and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

There are several opportunities for students to supplement in class theoretical learning with real-life, experiential learning. Among these opportunities are service-learning fellowships, workplace internships, and short-term volunteerism. This poster examines a student's unique experience of participating in all three opportunities and focuses on what benefits each practice contributes to the student's professional preparation. This fellowship was funded by the Center for Regional Engagement.

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Out of the balcony: Black disciples in the Christian Church (Disciples of Christ)

Crager

***+Donna Slone-Crumbie, Dr. Alana Scott, Mentor,* Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

Since its occurrence in 1801, historians have often recounted the events of what is historically referred to as the "Second Great Wakening." What began with a handshake between Thomas and Alexander Campbell and Barton W. Stone, led to what is now known as the Christian Church (Disciples of Christ). Touted as the "climactic event of the Western Great Revival" Cane Ridge was the site where approximately 30,000 people of all ages, social, cultural, and economic backgrounds met for the historical event. Somewhat absent from the research, however, is an examination of the impact the "Second Great Wakening" had on the African Americans who lived and worshipped in Bourbon County, Kentucky, then, and thereafter. After conducting interviews with representatives of the Christian Church (Disciples of Christ), the curator of The Cane Ridge Shrine, and an extensive physical examination of documents, this presentation will discuss how African American Christian Church (Disciples of Christ) moved out of the balcony and took ownership of their spiritual lives.

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Meditation in the holler: Practical exercises to help children in distress

Crager

Sarah Shepherd, Dr. Joy L. Gritton, Mentor,* **Department of International and Interdisciplinary Studies, Caudill College of Arts, Humanities, and Social Sciences

This presentation will explore the potential benefits of meditation exercises for children, especially those who have experienced common psychological problems/disorders, such as ADHD, anxiety, depression, and trauma. A brief overview of the biological components of these conditions and the ways in which meditation may have a positive impact on developing minds and bodies will be introduced. Implications of meditation activities for children participating in an after school program in Eastern Kentucky (k-5) will be discussed, including which exercises seem most effective and the children's own self-evaluation of their benefit. This project is supported by the Undergraduate Research Fellowship Program, Appalachian Studies Program, Department of International and Interdisciplinary Studies, and the Haldeman Community Center.

P - 45

Industrial evolution: The relationship between the Industrial Revolution and percussion instrument advancements

Crager

***Nathan Connell, Dr. Brian S. Mason, Mentor,* Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

The art form of percussion performance has undergone great transformation over several centuries. During this transformation the 1800's were an especially progressive time for percussion instruments. This century was also one of the world's most progressive as a whole. The Industrial Revolution brought the world into a new era of invention and productivity. This project aims to connect the innovations of the industrial revolution to the innovations in percussion instrument manufacturing and highlight the effects of that development in the music following that progress. Additionally, the project draws from major percussion writings such as James Blades', A History of Percussion and John Beck's, Encyclopedia of Percussion, as well as various score studies and time in the Percussive Art Society's Rhthym! Discovery Center. A lack of concrete documentation leaves the majority of the connections between the industrial revolution and percussion advancement to be inferred. This research was supported by a Morehead State University Undergraduate Research Fellowship.

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A history of electroacoustic percussion solo repertoire

Crager

***John Tyree, Dr. Brian S. Mason, Mentor,* Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

In the 1940s, electronics began finding their way into the music world, specifically in 1939, with John Cage's first work to use tape in live performance; Imaginary Landscapes No. 1. From this point, electroacoustic accompaniment made the most appearances in percussion repertoire. This research will examine the use of electronics in solo percussion repertoire from the 1940s to the present. These media will include tape, complex electronics, and computer processing. A few selected works will be discussed in detail. Pieces will include: 27'10.554" For a Percussionist (1956), John Cage; Child of Tree (1974), John Cage; Can't See The Forest…Music (1972), Daniel Lentz; Metamorforsi I per Marimbafono e Nastro (1978), Ivan Patachich; Fabian Theory (1987), Nigel Westlake; Six Japanese Gardens (1993), Kaija Saariaho; Watershed IV (1995), Roger Reynolds; Daydreams for Marimba (1991), Philippe Boesman; and Two Hands (Not Clapping) (2009), Wayne Siegel. At the conclusion of the study, a chronological index of electroacoustic percussion solos will be included. This research aims to provide a history of the usage of electronics in solo percussion literature to gain a greater understanding of the evolution and future of the field. This research was supported by a Morehead State University Undergraduate Research Fellowship.

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Understanding regional disparities in basic human needs: Findings from a gateway community action council needs assessment

Crager

***Julia Back, Dr. Lisa Shannon, Mentor,* Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

This collaborative project with Gateway Community Action Council sought to identify regional disparities, community services and targeted needs while advocating in developing a strategic funding plan. This strategic plan affects the populations of: Bath, Menifee, Montgomery, Morgan, and Rowan Counties which constitutes the Gateway service area. Data for this poster was obtained from 530 client surveys that lived in one of the designated Gateway Area counties and filled out the needs assessment survey. Five hundred and eight respondents (N = 508) who were over the age of 18 (or did not have missing data on age) were included in the analysis. The factors of age, income, gender, race, and marital status were examined in the Client Needs Assessment. When interpreting data from the demographic variable age the results show the mean age of participants was 41 years old. The most commonly reported yearly income range was $0-$9,999 (38.5%). The majority were female (80.2%) and Caucasian (96.9%). Over one-fourth (43.6%) of the population were married and a little over one-third resided in Morgan County (40.0%). When broken down the main service needs identified was: employment (31.4%). This research was supported by a MSU Undergraduate Research Fellowship.

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The deception of crisis pregnancy centers: Exposing fake clinics

Crager

***Demi N. Jacques, Dr. Bernadette Barton, Mentor,* Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

Crisis Pregnancy Centers (CPCs) have appeared all over the country in response to facilities that offer reproductive health services for women, including access to birth control and abortion services. CPCs are often deliberately located adjacent to abortion clinics, and use deceptive tactics and misinformation to dissuade pregnant women from getting abortions. CPCs push a religious pro-life agenda while presenting themselves as legitimate medical facilities despite having little or no medical accreditation, and distributing inaccurate medical information. CPCs outnumber abortion providers. Many CPCs receive federal funds despite being religiously affiliated. Some medical clinics, including those on college campuses, refer pregnant women to them. This poster provides an overview of CPCs, explores the costs of such centers to women's reproductive health, and argues that truth-in-advertising be demanded of CPCs, and the public must be made aware of this growing health concern.

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Young students' attitudes toward contemporary pornography

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Hannah Mabry, Dr. Bernadette Barton, Mentor,* Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

With the increased use of free internet pornography, a majority of today's youth are able to access pornographic content that would have been difficult to find just a couple of decades ago. The rise of raunch culture has also increased the likelihood for young people to stumble upon pornographic material at an earlier age, estimated to be an average of 10 to 14 years old. Other unique differences to be explored with this generation include the increasingly common experiences with "sexting", exchanging mature adult content through social media, and soft-core pornography that can be viewed on daytime television programs or in other forms of mainstream media. The content of pornography is often critiqued for its violence, sexism, and racism which may arguably desensitize its viewers. Since most young people are not exposed to sex education programs besides those of abstinence only curriculum, it is reasonable to assume that pornography is a major source of their knowledge about sex. This poster presents some insight into what young people are experiencing with today's mainstreaming of pornography and explore their attitudes toward its content.

P - 50

The effect of firocoxib on the pro-inflammatory cytokine expression in horses pre and post exercise

Crager

***Kaitlin N. Chaddock, Dr. Duane E. Chappell and Sara R. Malone, *Mentors,* Department of Agricultural Sciences, College of Science and Technology**

Firocoxib is a non-steroidal anti-inflammatory drug which inhibits cyclooxygenase-2 (COX-2) and is used for the alleviation of pain and inflammation in horses. Aged horses, from the Morehead State University riding program, (n=9) were placed into two groups [treatment = 57 mg daily of oral firocoxib, n= 4; control= non-medicated, n=5]. Blood samples (~4 ml) were collected via venipuncture into PAXgene tubes pre- and three hours post exercise. Polymerase chain reaction (PCR) with equine-specific primers was used to assess proinflammatory cytokine gene expression. A previously described inflammatory index was calculated and used for analysis. Statistical significance was set at $p<0.05$ and analysis was done using an ANOVA. The results are displayed as the mean ± SEM. There were no significant differences ($p=0.38$) pre-exercise between horses treated with firocoxib (0.78±0.74) and post-exercise control horses (-0.08± 0.56). There were no significant differences ($p=0.68$) post-exercise between treated (0.55 ± 0.92) and control horses (0.10 ±0.55). The pre and post-exercise inflammatory indexes were not significantly different between control horses and those horses treated with firocoxib. Research for this study was funded by the Undergraduate Research Fellowship.

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

Crager

***Tessa Combs, Dr. C. Brent Rogers, Mentor,* Department of Agricultural Sciences, College of Science and Technology and J*ohn Graham*, USDA NRCS**

Cover cropping is a cultural practice that can be used for weed suppression, nutrient cycling enhancement, soil health improvement, and improved cost efficiency. Organic matter accumulation and high levels of microbial activity near the soil surface in reduced tillage systems can decrease the germination of weed seeds. Cover crops can provide increased levels of nitrogen though symbiotic fixation and can help recycle other nutrients thereby reducing producer cost. In the fall of 2012 a multi-species cover crop of Austrian winter pea (Pisum sativum subsp. arvense), crimson clover (Trifolium incarnatum), daikon radish (Raphanus sativus), and rye (Secale cereale) 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. Soil health tests measure characteristics such as aggregate stability, porosity, and biological activity. Preliminary data appear to show a trend toward soil health improvement. Research was supported by the MSU Undergraduate Fellowship Program and the Department of Agricultural Sciences.

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Tumor necrosis factor alpha gene expression before and after exercise in middle-aged and older horses

Crager

***Meagan M. Darby, Dr. Duane E. Chappell and Sara R. Malone, Mentors,* Department of Agricultural Sciences, College of Science and Technology**

Tumor necrosis factor-alpha (TNF-α) is a pro-inflammatory cytokine that is expressed at different levels depending on age of the horse. As horses age, they exhibit a lower inflammatory response to trauma. Twenty-six horses (n=8 mares; n=18 geldings) were used to test the hypothesis that middle-aged horses will have higher pre-exercise TNF-α values and lower post-exercise values than aged horses. Blood samples (~4 mL) were collected via venipuncture into PAXgene tubes before (pre) and three hours after exercise (post). TNF-α values were analyzed with polymerase chain reaction (PCR) with equine-specific primers. Statistical significance was set at $p<0.05$ and analysis was done using an ANOVA. Horses were split into age groups, middle-aged (<15 years; n=13; mean age 10 years; range 7-14 years) and aged (≥15 years; n=13; mean-age 17.6 years; range 15-21 years). The results are displayed as the mean ± SEM. Older horses had about the same ($p=0.24$) pre-exercise TNF-α levels as middle-aged horses (middle-aged 0.075 ± 0.06; older 0.18 ± 0.07). Post-exercise middle-aged horses had no significant difference ($p=0.119$) in TNF-α levels (middle aged -0.32 ± 0.08; older -0.14 ± 0.07). The magnitude of the response to exercise was similar in both groups of horses. Funded by Undergraduate Research Fellowship.

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The relationship between exercise intensity and pro-inflammatory cytokine expression in middle-aged horses

Crager

***Amanda Perkins, Dr. Duane E. Chappell and Sara R. Malone, Mentors,* Department of Agricultural Sciences, College of Science and Technology**

Exercise-induced increases in proinflammatory cytokine mRNA, including tumor necrosis factor alpha (TNFα) and interleukin-6 (IL-6) are comparable to that of an acute phase immune response. In comparison to documented inflammatory responses to exercise, in humans and young equine athletes, few studies have been conducted in regards to inflammatory response in aged horses. For this study, proinflammatory cytokine response levels were measured to compare high (n=5), low (n=5) intensity exercise, and a sedentary control group (n=3) of aged horses from Morehead State University's riding program (n=30). Pre and three hour post exercise blood samples were obtained via venipuncture. Blood samples (~4mL) placed in PAXgene tubes were vigorously shaken to lyse cells and liberate mRNA for PCR, using equine specific primers. TNFα, IL6, and the overall Inflammatory index were used to test the hypothesis that middle-aged high intensity equine athletes would have higher pre-exercise cytokine values and lower post-exercise values than low intensity equine athletes. Statistical significance, set at $p<0.05$, was derived from an analysis using ANOVA. Results showed no statistical difference for pre/post concentrations for TNFα, IL-6, and the overall inflammatory index ($p= 0.574, 0.207/ 0.649, 0.795/0.371, 0.070$, respectively). Research for this study was funded by the Undergraduate Research Fellowship.

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A twelve-week regional engagement class includes teeth brushing skills for greyhound dog's teeth to monitor prevention of periodontal disease

Crager

***Amber Hamilton, Dr. Kimberly Peterson, Mentor,* Department of Agricultural Sciences, College of Science and Technology**

This project is a twelve-week animal husbandry class taught by a Veterinary Technology student at the Morehead Youth Development Center with adjudicated girls (14-18 years) as greyhound dog handlers. One goal of this class is to demonstrate the importance of regular and proper teeth brushing in the treatment and prevention of periodontal disease in dogs. Eighty percent of dogs seen at veterinary clinics have dental disease by 2 years of age. The subject dogs' teeth were professionally cleaned at the start of the class. The condition of the dog's teeth is assessed weekly to monitor teeth brushing efficacy. A measure of biofilm or calculus and indications of periodontal disease are included in the weekly assessment. This project's aim is to demonstrate how a common condition can be prevented with proper technique in teeth brushing. This project is sponsored by Undergraduate Fellowship through the Center for Regional Engagement.

P - 55

Effects of two-stage weaning duration on beef cattle growth parameters

Crager

***Paige C. Scheiderer, Jocelyn C. Zaborowski, Ashley N. Deller, Dr. Flint Harrelson and Dr. Patricia Harrelson, Mentors,* Department of Agricultural Sciences, College of Science and Technology**

Weaning, the physical separation of dam and calf, occurs at approximately 6 months of age in beef cattle. The goal of this study was to determine if a two-stage weaning process would impact the weight gain in calves or body condition scores (BCS) of their dams post-weaning compared to abrupt separation. The two-stage process includes an anti-suckling device, which prevents the calf from nursing. Abrupt separation and cessation of nursing will cause measurable stress on a calf. This stress can lead to decreased feed intake and depressed weight gain. Forty-eight Angus calves were separated into 3 treatments. Calves in treatment 1 were weaned by abrupt separation at weaning, treatment 2 calves were fitted with anti-suckling devices 2 days prior to weaning, and treatment 3 calves were fitted with anti-suckling devices 4 days prior to weaning. Weights of the calves and the BCS of their dams were taken pre-weaning, on the day of weaning, and post-weaning. Results showed that two-stage weaning had no effect ($P = 0.52$) on rate of gain, post-weaning in calves. In dams, no effect ($P > 0.78$) was observed for BCS at or following weaning. This research was supported by the MSU Honors Program.

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Students from Morehead Youth Development Center and Morehead State University train greyhounds to complete Canine Good Citizen certificate

Crager

***Shelby B. Treadway, Dr. Kimberly Peterson, Mentor,* Department of Agricultural Sciences, College of Science and Technology**

This research project investigates the use of breed specific training techniques to help off-the-track greyhound dogs learn the ten tests required to complete a Canine Good Citizen (CGC) Certification in twelve weeks. Testing includes:1) accepting a friendly stranger, 2) sitting politely for petting, 3) appearance and grooming, 4) out for a walk (walking on loose lead), 5) walking through a crowd, 6) sit and down on command and staying in place, 7) coming when called, 8) reaction to another dog, 9) reaction to distraction 10) supervised seperation. This research has, in its short application, assited six off-the-track greyhounds at Morehead Youth Developoment Center (MYDC) to become CGC within twelve weeks. The goal, when published, is to help many CGC certidfied greyhounds across the nation be placed more quickly in adoptive home. Not only does it benefit the greyhounds, but appears to benefit the dog handlers at Morehead Youth Development Center through experiential learning, making it easier for them to see how hard work and dedication to proper behavior may make them more successful and productive in their future. This project is suported by Morehead State University Undergraduate Research Fellowship, Commonwealth of Kentucky Department of Juvenile Justice, and the Kentucky Veterinary Medical Association Foundation.

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Effects of two-stage weaning duration on beef cattle behavior parameters

Crager

***Jocelyn C. Zaborowski,*Ashley N. Deller, Paige C. Scheiderer, Dr. Flint Harrelson and Dr. Patricia Harrelson, Mentors,* Department of Agricultural Sciences, College of Science and Technology**

In the beef cattle industry weaning is a necessary and extremely stressful time for the calf. Stress is caused not only from removing the calf from the dam, but also changing the calf's nutrition by preventing nursing. Signs of a stressed calf are increased walking and vocalizing. A method of possible stress reduction is a two-stage weaning process using an anti-suckling device, which prevents the calf from nursing. In previous research, anti-sucking devices have been shown to decrease calf vocalization and time spent walking, and increase time eating and lying down. During this study anti-suckling devices were placed on calves either four days prior to weaning, two days prior to weaning or no device was placed on the calf. We measured number of times calves vocalized and their activity in the days leading up to and after weaning. We observed a treatment by day interaction as calves without anti-suckling devices, vocalized more starting on the day of weaning and continued 6 days after ($P < 0.0001$). Behaviors of calves equipped with anti-suckling devices were observed to be altered compared to those not wearing anti-suckling devices ($P < 0.0001$). This research was supported by MSU Undergraduate Research Fellowship.

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Hospital process management – a case study

Crager

***Tange Awbrey, Dr. Ahmad Zargari, Dr. Hans Chapman, Dr. Yuqui You, Mentors,* Department of Applied Engineering and Technology, College of Science and Technology**

Management philosophies and statistical process control methods as part of quality assurance in manufacturing received world-wide support throughout the past century. In contrast, the application of these philosophies within the healthcare industry is a recent evolution. Despite proven concepts and innovations, change has progressed slowly. Current managerial concepts and practices fail to recognize the value of customers from both an organizational and community perspective. As learned from its industrial counterpart, the concept of customer specifications or 'personalization' is a recent movement within healthcare facilities. Continuous Quality Improvement, Six Sigma, and Lean Six Sigma are the primary modes of quality improvement within healthcare. These organizational-wide philosophies provide comprehensive tools and problem solving techniques used to re-engineer, monitor, and maintain the numerous, critical processes found throughout hospital wards. A comparative analysis utilizing statistical process control tools for St. Claire Medical Center in Morehead, KY and John D. Dingell Veterans Affairs Medical Center in Detroit, MI will be utilized to emphasize how the practices of specific quality management tools can provide additional value for internal and external customers.

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Assessment of recent trends in renewable energy production in the US

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

Chase Johnson, *Robbie Rowlett, Dr. Hans Chapman, Mentor,
Department of Applied Engineering and Technology, College of Science and Technology

The need for improved utilization of renewable energy sources, such as solar, wind, biomass, geothermal, and hydroelectric, have heightened in recent times. The US consumes about 20% of the world's total energy supply, even though its population is only 5% of the world's population. Today, the US depends substantially on fossil fuels, mostly imported petroleum. This poses concerns for energy systems security. According to the World Energy Council (WEC), the U.S placed 12th among 90 countries in its Energy Sustainability Index in 2012.

Many countries are adopting efficient energy technologies and practices. While the US is making progress in the development of renewable energy sources, particularly wind and biomass, other countries, notably Germany and Japan have outpaced the US in the production and use of photovoltaic (PV) solar technology.

This work is an assessment of recent trends in the utilization of Renewable Energy as the US competes with the rest of the world. Investing in renewable energy systems is critical to meeting future energy demand and to lessen the effects of climate change.

This work has been made possible with the support of the Department of Applied Engineering and Technology (AET) and the Center for Regional Engagement (CRE).

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Water quality analysis in eastern Kentucky using GIS

Crager

***+Andre Talley, Dr. Sanjeev Adhikari, Mentor,* Department of Applied Engineering and Technology, College of Science and Technology**

The water quality of Rowan County is relatively poor. The situation can be readily improved. This can be done by using a combination of both Geographical Information System and Statistical Process Control. An analysis of the water systems of Rowan County will be conducted for defective properties. GIS will be used to create a visual representation of the data dictated by SPC. From there the statistical results will be interpreted and the root cause of the problems with the water will be identified.

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Design refinement by iterative virtual experimentation (D.R.I.V.E.): A methodology for solving common engineering design problems

Crager

***+Charles M. "Matt" Watson, Dr. Nilesh Joshi, Mentor,* Department of Applied Engineering and Technology, College of Science and Technology**

By combining experimental design methods with commonly used analysis and design tools such as CAD, FEA and CFD, engineering designers can develop powerful statistical models and utilize graphics visualization to analyze various design iterations. Prior to the usage of FEA & CFD, designers were limited in their exploration into design possibilities and produced limited numbers of physical models to be tested. This excludes many possibilities for consideration and severely limits the total system improvements that can be tested and implemented. This research focuses on showing how the various combinations of these tools can be utilized to optimize final designs of various components while maintaining absolute minimal requirements for prototype manufacturing or to negate the requirements altogether. By utilizing these tools, we can find that the total number of design possibilities to be explored will increase significantly. This will ultimately lead to an overall more robust and functional design as well as eliminating waste and scrap that would be associated with testing of prototype components.

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Synthesis, characterization and spectroscopy of dihydropyrazoles from (2E,5E)-2,5-dibenzylidenecyclopentanone

Crager

***Nick Alcorn, Dr. Mark Blankenbuehler* and *Dr. Nathan Coker, Mentors,* Department of Biology and Chemistry, College of Science and Technology**

Compounds containing pyrazole and dihydropyrazole rings as well as benzenesulfonamide groups have demonstrated biological activity and are used to treat a variety of conditions. The synthesis and study of new compounds containing these groups is essential for the development of new drugs. The synthesis of (E)-4-(6-benzylidene-3-phenyl-3a,4,5,6-tetrahydrocyclopenta[c]pyrazol-2(3H)-yl)benzenesulfonamide and 4-(2-((2E,5E)-2,5-dibenzylidenecyclopentylidene)hydrazinyl)benzenesulfonamide was performed. The new compounds were characterized with Nuclear Magnetic Resonance (NMR), Infrared (IR), Ultraviolet (UV) and Fluorescence spectroscopy. Support provided by the Department of Biology and Chemistry.

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Investigating Rowan County lepidoptera biodiversity, part two: Lycaenidae

Crager

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

According to Charles Covell's 1999 The Butterflies and Moths (Lepidoptera) of Kentucky: An Annotated Checklist and its 3 supplements, there are 2493 species of Lepidoptera (butterflies, moths, and skippers) known from Kentucky, with 563 of these occurring in Rowan County. In part one of this project we identified five new county records. Our project updates Covell's records from Rowan County via new data from The Society of Kentucky Lepidopterists and the current Lepidoptera collections of Morehead State University (MSU), Jonathan Smith, and the Pine Hills Survey. This poster shows the second part of our biodiversity survey and includes information on the family Lycaenidae. It lists the Lycaenid's common and scientific names and Hodge number. Information about their host plants, seasonality, sexual dimorphism, and global, USA, and Kentucky biodiversity is also provided. Covell recorded seven Lycaenids in Rowan County and we have discovered eleven new county records, bringing our total to eighteen species of Lycaenidae. We would like to thank the MSU Department of Biology and Chemistry for partial support, and to A. Johnathan Smith for permission to photograph specimens from his collection.

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Quantification and characterization of Sosc2 expression after spinal cord injury in Xenopus laevis.

Crager

***Harley J. Davis, Dr. Kurt M. Gibbs, Mentor,* Department of Biology and Chemistry, College of Science & Technology**

In a previous study, we used microarray analysis to identify several hundred genes whose expression changes as a result of spinal cord injury in Xenopus laevis. We identified that the gene suppressor of cytokine signaling 2 (Socs2) was upregulated in the successfully regenerating tadpole hindbrain and downregulated in the adult frog, which fails to regenerate after injury. The purpose of this study was to confirm the expression pattern of Socs2 with greater accuracy, using quantitative real-time PCR and identify the types of cells expressing Socs2 with in situ hybridization. With a better understanding of its role in recovery from spinal cord injury, Socs2 may be a candidate gene to manipulate in the adult frog to enhance functional recovery. This work was supported by NIH grant R15HD076643-01A1.

P - 65

Biochemical characterization of *in vitro* adipocyte differentiation from precursor cells

Crager

***Craig J. Ferryman, Dr. Christopher Cottingham, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

Atypical antipsychotic drugs are associated with severe metabolic side effects, including weight gain, obesity, and Type 2 diabetes. The physiology behind these side effects is not understood, and so the main goal of this research is to study the effects of antipsychotic pharmacological agents on adipogenesis. Based upon previous work, we have reason to hypothesize that antipsychotics may exert novel adipogenic actions through the alpha2A adrenergic receptor (AR), which is known to be involved in adipose physiology. The main model system for our research is the 3T3-L1 cell line, a strain of fibroblasts which function as adipocyte precursors. The present work is aimed at characterizing the kinetics and potency of varying conditions for inducing adipogenic differentiation. The characterization presented herein is biochemical, relying on Western blotting to detect expression of characteristic adipocyte marker proteins. This work, while preliminary in nature, is essential for future progress in investigating effects of antipsychotics on adipogenic differentiation. In the long-term, our research is of great potential importance to psychopharmacology, because if we find that some antipsychotics boost differentiation, we can further study the mechanism behind it. This work is supported by the NIH via KBRIN (P20GM103436).

P - 66

Subchronic treatment of NMDA antagonists on acquisition of learning

Crager

***[1]Allison Fletcher, [2]Dr. Ilsun M. White, Mentor, [1] Department of Biology and Chemistry, College of Science and Technology and [2]Department of Psychology, College of Science and Technology**

Studies have shown that anticonvulsant drugs that block N-methyl-D-aspartate (NMDA) receptors may disrupt postnatal neurogenesis, memory, and long-term cognitive function. Chronic administrations (daily, >280 days) of NMDA antagonists disrupt acquisition of complex learning and motivation in rats. The present study examined the effects of subchronic treatment of NMDA antagonist on acquisition of simple learning. Male Wistarrats were shaped to press the lever for a food pellet. Rats received subchronic injections (once/day, 5 days) of MK801 (0.2mg/kg), PCP (9mg/kg), or saline, prior to their training in a fixed-ratio 5 (FR5), which required rats to make five lever-presses for a food pellet. MK801-treated rats were tested after each injection, whereas PCP group during withdrawal days 3-7. Compared to saline, MK801 markedly delayed the first lever press and runtime, with a slight improvement as learning progressed. PCP delayed the response latency, with no effects on runtime, indicating a sustained state of motivation. Our findings suggest that NMDA receptor activation is critical in simple learning and that chronic use of NMDA antagonists as anticonvulsants would produce short- and long-term learning deficits. Further study is warranted. Allison Fletcher is an honors undergraduate research fellow. Supported by NIH grant: R15DA015351.

P - 67

Quantification and cell-type identification of miR-133b expression after spinal cord injury in Xenopus laevis.

Crager

*Minus R. Helton, Mackenzie Hamilton, Dr. Kurt M. Gibbs, Mentor, **Department of Biology and Chemistry, College of Science and Technology**

Unlike mammals, Xenopus laevis tadpoles can regenerate their spinal cord after injury, but are unable to do so as adult frogs. The factors underlying this developmental loss of regenerative capacity have yet to be uncovered. MicroRNAs (miRNAs) are small (approximately 19-22 nucleotides), non-coding RNA molecules that play vital roles in cellular growth, development, and maintenance in embryos and adult organisms. miRNAs simultaneously regulate the expression of many genes and have shown functional conservation from round worms to humans. In our previous work, we have identified hindbrain neurons that are capable of regenerating their axons after spinal cord injury in tadpoles, but fail to regenerate in the adult frog. As miR-133b has been implicated in axon regeneration in other organisms, we questioned if it was also involved with axon regeneration in X. laevis as well. Using quantitative real-time polymerase chain reaction (qRT-PCR) and in-situ hybridization, we assayed the expression of miR-133b in the hindbrain of tadpoles and adult frogs after spinal cord injury. Our data suggest that the developmental decline in axon regeneration could in part be mediated by miR-133b. This work was supported by NIH grant R15HD076643-01A1.

P - 68

Morphological characterization of *in vitro* adipocyte differentiation from precursor cells

Crager

***Victor Kremser, Dr. Christopher Cottingham, Mentor,** **Department of Biology and Chemistry, College of Science and Technology**

Atypical antipsychotic drugs are associated with severe metabolic side effects, including weight gain, obesity, and Type 2 diabetes. The physiology behind these side effects is not understood, and so the main goal of this research is to study the effects of antipsychotic pharmacological agents on adipogenesis. Based upon previous work, we have reason to hypothesize that antipsychotics may exert novel adipogenic actions through the alpha2A adrenergic receptor (AR), which is known to be involved in adipose physiology. The main model system for our research is the 3T3-L1 cell line, a strain of fibroblasts which function as adipocyte precursors. The present work is aimed at characterizing the kinetics and potency of varying conditions for inducing adipogenic differentiation. The characterization presented herein is morphology-based, relying on observation of physical changes from fibroblast-like to adipocyte-like together with Oil Red O staining for intracellular lipid accumulation. This work, while preliminary in nature, is essential for future progress in investigating effects of antipsychotics on adipogenic differentiation. In the long-term, our research is of great potential importance to psychopharmacology, because if we find that some antipsychotics boost differentiation, we can further study the mechanism behind it. Research supported by an MSU Undergraduate Research Fellowship and NIH via KBRIN (P20GM103436).

P - 69

Applying SHE analysis to a beetle biodiversity study

Crager

***Bailey Lucas, Hannah Brough, Dr. Sean O'Keefe, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

Biodiversity is a crucial component for conservation in any given area. Beetles comprise approximately 25,000 species in North America, and therefore, are a perfect focus measuring biodiversity. For this study, biodiversity measurements were derived from the SHE analysis, which stands for species richness, diversity measure H, and evenness. This is a distribution-free methodology that presents the information in an all-inclusive manner by using modified Shannon and Simpson variables, H1 and H2. Furthermore, unlike other indices, the SHE analysis can effectively use the number and abundance of species to analyze patterns and diversity values for biodiversity studies involving any grouping. This analysis creates new, more comprehensive possibilities for future biodiversity studies. These methods were applied to three different sampling sites taken in 2011 from the Daniel Boone National Forest. Each site has a different ecological history; one has been frequently burned, one has been less frequently burned, and one has not been burned, which serves as the control of the study. Capture methods included pan traps and pitfall traps. This study was funded in part by the Department of Biology and Chemistry. We also thank the USFS for permission to conduct this study in the Daniel Boone National Forest.

P - 70

Regeneration of descending supraspinal axons in *Xenopus tropicalis*

Crager

***Calie Morgan, Dr. Kurt M. Gibbs, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

Anuran amphibian tadpoles have the ability to regenerate their central nervous system (CNS) after injury. We have previously shown that Xenopus laevis tadpoles can regenerate specific populations of supraspinal axons after complete spinal cord transection. However, it has yet to be demonstrated if Xenopus tropicalis possesses the same CNS regenerative capacity. In this study, we used retrograde double-labeling to show the brain nuclei in tropicalis that truly regenerate after injury and compare them to our previous results in laevis. This work was supported by NIH grant R15HD076643-01A1.

P - 71

Mutations in the N-terminal region of *Acinetobacter baylyi* UmuDAb that affect gene regulation after DNA damage

Crager

***Megan Peterson, *Travis Witkowski, *W. Kathyrne Wells, *Deanna Stinnett, Alison N. Grice, Dr. Janelle Hare, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

In the response of most bacteria to DNA damage, the protein LexA represses the transcription of multiple genes before DNA damage, but cleaves itself after DNA damage and thus allows transcription. In Acinetobacter bacteria, multiple genes (e.g., ddrR and umuDAb) are induced by DNA damage, but these bacteria lack LexA. However, a homolog of the error prone polymerase subunit UmuD, called UmuDAb, surprisingly regulates DNA damage responsive genes, suggesting that it may have a LexA-like function. In a umuDAb null mutant, ddrR is unrepressed regardless of DNA damage, suggesting specifically, a repressor-type of regulation. Mutant forms of UmuDAb were constructed to identify the regions of UmuDAb that allow it to function as a repressor. Deletion of the N-terminal 82 amino acids of UmuDAb removed the repression of both ddrR and umuDAb in the absence of DNA damage, suggesting that the N-terminus of UmuDAb was indeed required for repression. Additionally, using protein modeling, we identified helix structures in UmuDAb that are similar to the N-terminal winged-helix-turn-helix motif that LexA uses to bind and repress promoter activity. Accordingly, both a helix-altered mutant and a cleavage-deficient mutant of UmuDAb have been constructed to determine the requirements of UmuDAb repression. This work was supported by a KBRIN NIH grant (P20GM103436) and NIH grant R15GM085722-02.

P - 72

Thyroid hormone receptor expression in the developing hindbrain of *Xenopus laevis*

Crager

***Brittani Price, Dr. Kurt M. Gibbs, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

As tadpoles, *Xenopus laevis* frogs are able to regenerate their supraspinal axons following complete spinal cord transection. However, this ability to repair the damaged central nervous system (CNS) is lost with progressing development. The development of *Xenopus laevis* is controlled by thyroid hormone, whose signal is mediated through thyroid hormone receptors alpha and beta. We have previously identified populations of regenerating neurons in the hindbrain of *Xenopus laevis* tadpoles and have shown that exogenous thyroid hormone inhibits the regenerative capacity of these animals. We are now characterizing the expression of thyroid hormone receptors in the tadpole hindbrain to better understand thyroid hormone specific effects on the regenerative capacity of hindbrain neurons. This work was supported by NIH grant R15HD076643-01A1 and an MSU Undergraduate Research Fellowship.

P - 73

Investigating Rowan County Lepidoptera biodiversity, part three: Apatelodidae, Mimallonidae, Epiplemidae, and Notodontidae

Crager

***Brittany Puckett, Dr. Sean O'Keefe, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

All moths are herbivores, and therefore their diversity in a particular area is dependent on the diversity of plants in that area. Updating lists of moths found in an area thus is important as a surrogate for measuring the biodiversity of that area. According to the Kentucky Society of Lepidopterists Database, Rowan County, Kentucky has 484 unique moth species. An inventory of species from four Lepidoptera families: Notodontidae, Apatelodidae, Epiplemidae, and Mimallonidae, was made for Rowan County, Kentucky. Collection of new specimens (Pine Hills Survey) and working with Jonathan Smith and his collection has been done to determine an up-to-date record of moths within Rowan County. There are 32 known species of Notodontidae in Kentucky, 20 of which were previously known from Rowan County. We have identified 11 new species from Rowan County. Within the family Apatelodidae, there are two species found in Kentucky and they were both previously known from Rowan County. Neither of the two species of Mimallonidae nor either of the two species of Epiplemidae found in Kentucky have been recorded from Rowan County. We add one species from each family to the Rowan County list. We thank the Department of Biology and Chemistry for partial support.

P - 74

A northern fish in a southern land: Conservation status of Trout-Perch *(Percopsis omiscomaycus)* in Lewis County, Kentucky.

Crager

***Brooke A. Washburn, Dr. David J. Eisenhour, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

The Trout-Perch, *Percopsis omiscomaycus*, is a fish species with a poorly understood distribution in Kentucky, but anecdotal evidence suggests it is localized and declining. This study documents the species' current distribution in Kentucky, compares that to its historical distribution, and identifies habitat variables associated with its presence. This phase of the study investigated four watersheds, all in Lewis County, Kentucky: Cabin Creek, Quicks Run, Salt Lick Creek, and Kinniconick Creek. Sites were surveyed for Trout-Perch by intensively seining pools; habitat data collected measured water quality and physical characteristics of the stream at the site. We detected Trout-Perch at 5 of 22 sites sampled from April to September 2014. Trout-Perch appear to be locally common in Quicks Run and Salt Lick Creek; at each of the two sites over 30 individuals were detected. However, we did not detect Trout-Perch in Cabin Creek or Kinniconick Creek. Historical data suggest that Trout-Perch were never common in Cabin Creek or Kinniconick Creek, but our inability to detect the species in an intense, targeted survey suggest it has declined in these streams. Streams containing Trout-Perch in our study characteristically had sandy substrates and large, deep pools. Partial funding was provided by an Undergraduate Research Fellowship.

P - 75

Utilizing DNA barcoding to identify bacteria in treated water samples

Crager

***Alexandria Williams, *Taylor Patrick, Justin Mason, Dr. Geoffrey W. Gearner, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

Treated water samples are routinely tested for the presence of bacteria to ensure the safety of potable water and comply with regulator y standards. When water samples test positive for bacteria, it becomes necessary to identify the contaminating microbes. The purpose of this project was to utilize DNA barcoding to identify bacteria isolated from treated water samples. DNA was extracted from bacterial isolates grown on tryptic soy agar plates using a commercial kit (Qiagen). Part of the 16s ribosomal RNA gene was amplified from the extracted DNA by polymerase chain reaction (PCR), and the PCR products were assessed by agarose gel electrophoresis. PCR product samples were then sent to GeneWiz for DNA sequencing. BLAST analysis of the DNA sequences indicated that the bacterial isolates were identified as either Klebsiella pneumonia or Enterobacter sp. The DNA barcoding results were in agreement with phenotypic tests conducted on the bacterial isolates. This work was supported by Morehead State University's Water Testing Laboratory and MSU's Undergraduate Research Fellowship program.

P - 76

A meta-analysis of sampling techniques for spider surveys

Crager

***Logan Williams, Dr. Sean O'Keefe, Mentor,* Department of Biology and Chemistry, College of Science and Technology**

We located nearly 200 peer-reviewed, published, scientific articles that incorporated quantitative and semi-quantitative techniques for sampling spiders. From these articles we gathered data regarding sampling procedures such as trapping method (e.g. pitfall, sweeping, beating plants, hand extraction, etc.), duration of trapping (number of days), number of traps used, preservative used (e.g. polypropylene glycol, alcohol, water, etc), trap size (for pitfall traps, diameter and volume of cup), as well as sampling design (random or stratified plots, arrangement of sampling within plot, etc.). The goal of this study is to determine which survey/sampling methodologies are most commonly used and to determine the common means of standardizing these techniques for measuring the biodiversity of spiders. A meta-analysis of quantitative survey techniques for spiders has yet to be published. This research was funded in part by the Department of Biology and Chemistry and in part by the Honors Program.

P - 77

Pollen, spores, and algae from unnamed surficial units in the Cranston 7.5' Quadrangle, Rowan County, KY

Crager

***Morgan K. Black, *Joseph K. Greene, Stewart M. Abrams, Matthew A. Bentley, *Matthew D. Boudreaux, Sharon J. Brooke, Joshua A. Payne, Dakota C. Robertson, John T. Willis, Dr. Charles E. Mason and Dr. Jennifer M.K. O'Keefe, Mentors,* Department of Earth and Space Science, College of Science and Technology**

Pollen, spores, and algae are known indicators of depositional environment and the paleoecology of the watershed surrounding a river system. A new series of surficial deposits, likely representing Pliocene-Pleistocene deposition, were found along the North Fork of Triplett Creek during summer 2014 during routine field work. The surficial deposits contain abundant leaf beds above imbricated, well-rounded pebble and cobble conglomerate, representing a series of fluvial and lacustrine depositional settings. Eight samples were collected from one of three exposures. Samples were processed for palynology and micropaleontology using a modification of the Schols enzymatic technique (O'Keefe and Wymer, in review). Many layers contain abundant pollen, spore, and algal fossils, in addition to fossil leaves. These "palynomorphs" indicate deposition occurred during a cooler climate than is present today and that the watershed likely contained a birch-hemlock-oak woodland with a fern-rich understory. Charcoal was an abundant component of some horizons and indicates that wildfires were an important driver of ecosystem diversity. Palynomorphs forms found in these sediments will be described and their environmental and climate significance will be discussed. This project was undertaken as part of ESS 413: Micropaleontology.

P - 78

Diatoms from unnamed surficial units in the Cranston 7.5' Quadrangle, Rowan County, KY

Crager

***Matthew A. Bentley, *John T. Willis, Stewart M. Abrams, Morgan K. Black, Matthew D. Boudreaux, Sharon J. Brooke, Joseph K. Greene, *Joshua A. Payne, *Dakota C. Robertson, Dr. Charles E. Mason and Dr. Jennifer M.K. O'Keefe, Mentors,* Department of Earth and Space Science, College of Science and Technology**

Diatoms are known indicators of depositional environment, the distribution of which are controlled by climate and pH at the time of deposition. A new series of surficial deposits, likely representing Pliocene-Pleistocene deposition, were found along the North Fork of Triplett Creek during summer 2014 during routine field work. The surficial deposits contain abundant leaf beds above imbricated, well-rounded pebble and cobble conglomerate, representing a series of fluvial and lacustrine depositional settings. Eight samples were collected from one of three exposures. Samples were processed for palynology and micropaleontology using a modification of the Schols enzymatic technique (O'Keefe and Wymer, in review). Pennate diatoms are an abundant component of the microflora. These indicate deposition in freshwater or wet-surface settings that are temperate to cold. Colonies of pennate diatoms are typically found attached to rocks or to vegetation in the stream, or attached to trees, rocks, and mosses in wet forests. Pennate forms found in these sediments will be described and their environmental and climate significance will be discussed. This project was undertaken as part of ESS 413: Micropaleontology.

P - 79

What are local bees eating?

Crager

***Sharon J. Brooke, Dr. Jennifer M.K. O'Keefe, Mentor,* Department of Earth and Space Science, College of Science and Technology**

Pollen content of honey samples can be used for honey "typing." This is the primary way to differentiate different plant contributions to a honey and is required prior to sale of labeled honey in most countries and is used to promote bee-friendly gardening. In the United States this is done less frequently, as there are few trained experts, or "Melissopalynologists." Due to hive collapse syndrome and increasing export, its use is increasing and more trained Melissopalynologists are needed. This small study represents two semesters of training exercises in Melissopalynology. Three samples of local honey were obtained for analyses: two from the MSU Browning Orchard, and one from Honey and Bee Connection. The overarching question for the study is "What are local bees eating?" This information is used to "type" local honey samples and provide suggestions to local beekeepers on which bee-preferred plants should be cultivated. Each sampled honey has a unique pollen fingerprint, which includes several basic types: Tulip Poplar, Apple, Hickory, Magnolia, Oak, Clover, and Ragweed, as well as grains unique to each sample. The proportion of pollen grains in each sample is very different, and for the MSU samples, recommendations are given for future hive placement.

P - 80

Design and development of the cool drop test experiment edge of space payload system

Crager

***Victor Clarke, *Jacob Boeschel, *Austin Clark, *Trevor Padgett, Robert Twiggs and Bob Kroll, Mentors,* Department of Earth and Space Science, College of Science and Technology**

The purpose of The Cool Drop Test Experiment (CDTX) is to design and build a module for the Mayo Clinic that monitors and maintains an operational environment for stem cell research in a suborbital test vehicle. The test vehicle has been developed and will be flown by Terminal Velocity Aerospace (TVA) to support short interval microgravity research, atmospheric reentry, and return of experimental samples. The frozen stem cells must be kept at a temperature range of -80° to -40° C at altitudes maxing at 30.5 kilometers. The payload is composed of 2 1U sized CubeSats (approximately 10 cm2). One cubesat is used for the stem cell payload and insulation, while the other is the control system based on an Arduino Microcontroller, which monitors the status of the stem cells. Results of the initial design are presented here.

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Systems overview of project hummingbird pocketqube femtosat

Crager

***William Louis Roach-Barrette, Dr. Benjamin Malphrus and Robert Twiggs, Mentors,* Department of Earth and Space Science, College of Science and Technology**

Project Hummingbird aims to create an Arduino-powered 1.5p pocketqube, a 50mm X 50mm X 150mm nanosatellite. The primary goal of the project is to develop a standardized bus for use in future pocketqube missions, helping to eliminate the time normally associated with the development of a satellite, so more time can be spent on payload development and integration. Hummingbird consists entirely of off the shelf, inexpensive, easy to use/integrate parts based off the Arduino ecosystem, to lower the total costs and complexity of the satellite system. This was done in part so the bus could be used in conjunction with the IAE PocketQube Challenge, a program that aims to deliver a satellite that high school students could begin working with, without prior knowledge in satellite systems design. Hummingbird's structure was designed to be 3D printed, reducing total machine costs as well as time to produce. The PCB was designed for easy install of components as well as to minimize the total area needed for the electronics. Once completed, the same platform will then be adapted and improved upon for use in an upcoming pocketqube mission.

P - 82

The effect of increased hip rotation on lower body anaerobic power during the Wingate Anaerobic Power Test

Crager

***James Combs, *Aaron Hutchison, *Sydney Guffey, *Paul Hughes, *Josh Penix, Dr. Manuel Probst and Dr. Gina Gonzalez,* Mentors, Department of Health, Wellness and Human Performance, College of Science and Technology**

The Wingate Anaerobic Power Test (AnPT) has been used for decades to measure lower body peak and average anaerobic power, components critical to athletic performance. The test is typically performed on a cycle ergometer with minimal hip rotation in the sagittal plane, as in "traditional" cycling. However, the hip musculature can generate power in multiple planes. Therefore, the purpose of this study was to determine the effect of increased hip rotation on anaerobic power profiles. In a counter-balanced design, subjects performed both the "traditional" and "rotation" cycle tests on a Monark 874E ergometer. Following a 2-minute warm-up and a 10 second count-down, subjects were instructed to pedal as fast as possible against a resistance based on the subject's body weight. Our study suggests a lower peak power, but also a decreased power loss throughout the test during "rotation" than during "traditional" cycling.

P - 83

Motor development and skill acquisition through the lifespan

Crager

***Joanna Guerrant, Dr. Gina Gonzalez, Mentor,* Department of Health, Wellness, and Human Performance, College of Science and Technology**

Mastering physical movement occurs through motor learning and experience. Motor development is needed for successful acquisition of sport and other physical skills. A lack of motor skills has been associated with decreased physical activity later in life, which has been linked to a variety of hypokinetic diseases. This literature review will discuss motor learning across the lifespan. The review will focus on motor skill acquisition, short and long-term experiential learning, and feedback mechanisms within children, young adults and middle-aged to older adults. Based on this literature review, future directions will include examining the number of trials it takes to master a new skill and self-regulatory feedback mechanisms that are most successful in each age category. This project was supported by the MSU Undergraduate Research Fellowship.

P - 84

Factors surrounding the purchase and ingestion of pre-workout supplements

Crager

***Dylan Maldonado, Dr. Dayna Seelig, Mentor,* Department of Health, Wellness, and Human Performance, College of Science and Technology**

Sport, energy and weight loss supplements are a $7.4 billion industry and is the largest condition-specific dietary supplement category. In addition, college-aged students are one of the largest populations who consume supplements. This study administered a survey to answer questions surrounding pre-workout supplement usage of MSU students who use the Recreation and Wellness Center. The survey was designed to determine if subjects were completing research prior to purchasing and ingesting pre-workout supplements, what factors influenced the supplement they chose and if the subjects followed the directions on the label when ingesting the supplement. Only 48.3 percent of students reported always taking the supplement as directed by the label. Based on the answers in the survey 23.7 percent of students did no research prior to ingesting a pre-workout supplement. This research was funded through an undergraduate research fellowship.

P - 85

Fetal magnetic resonance imaging: Better imaging for a better start

Crager

Briana Buckler, Abbey Hall, Morgan Harvey, Cyndi Y. Gibbs, Mentor,
Department of Imaging Sciences, College of Science and Technology

Every four and a half minutes, a baby is born in the United States with some type of birth defect. This is equal to nearly 120,000 or 1 in every 33 babies annually. The use of fetal Magnetic Resonance Imaging (MRI) has the ability to give the parents of these 120,000 babies a more detailed diagnosis of fetal anomalies, as well as a greater understanding of their particular case. By using fetal MRI in conjunction with ultrasound, parents and doctors can have a better understanding of what the future will hold for their child. Physicians can treat the fetus in utero or be prepared to provide immediate treatment following birth. Fetal MRI has distinct advantages in preparation, treatment, and expectations throughout fetal development, and provides an increased chance at a prosperous life. Early diagnosis is the key for parent preparation and medical planning. If the use of fetal MRI may provide a better image, why not utilize this technology to give these babies the chance for a better start?

Presented at the 11th Annual Magnetic Resonance Seminar, hosted by Wexner Medical Center at the Ohio State University, poster competition (3rd place award).

P - 86

Running out of time: Magnetic resonance imaging in the diagnosis of early onset Alzheimer's disease

Crager

Ashley Bugg, Katelyn Peck, Lindsey Roberts, Cyndi Y. Gibbs, Mentor,
Department of Imaging Sciences, College of Science and Technology

Early Onset Alzheimer's is categorized as a disease that begins before the age of 65, typically occurring in the 40s and 50s. It is estimated that nearly 200,000 people suffer from the disease. Alzheimer's is the most common form of dementia. When arising at this age it is more likely to be misdiagnosed. Since Early Onset is rare, it is hard for the individual or people around them to identify symptoms initially. Although it can be difficult to detect, it is important to monitor potential symptoms because once they occur symptoms can progress at a fast rate. Magnetic Resonance Imaging (MRI) has demonstrated valuable insight about the disease. MR is the preferred imaging modality of choice for Alzheimer's because it allows accurate measurement of specific brain structures. The continued use of MR in the diagnosis of early onset Alzheimer's may prove to be extremely valuable in the diagnosis and treatment of the disease in the future.

Presented at the 11th Annual Magnetic Resonance Seminar, hosted by Wexner Medical Center at the Ohio State University, poster competition (2nd place award).

P - 87

March madness to sadness: The prevalence of extremity injuries in basketball

Crager

***Jason Cinnamond, Cassie Robinson, Cyndi Y. Gibbs, Mentor,* Department of Imaging Sciences, College of Science and Technology**

In 2012 there were 1.9 million sports-related emergency room visits. Of these, 570,000 (30%) were related to basketball injuries. Today, basketball is one of the most popular sports in the world. The style of play has changed dramatically from the days when players threw a soccer ball into a peach basket. Innovations ranging from the shot clock to the slam dunk have increased the speed of the game and the amount of athletic ability needed to be competitive. As athletes become more competitive the occurrence of injuries continues to rise. The most common basketball injuries are those to the lower extremities. Physicians have a gamut of tools at their disposal to aid in the evaluation and treatment of these injuries. Magnetic Resonance Imaging (MRI) is one such tool used to assess extremity trauma, especially those involving ligament, tendon, and muscle damage. MRI will continue to be on the forefront of medical imaging and the modality of choice for musculoskeletal imaging.

Presented at the 11th Annual Magnetic Resonance Seminar, hosted by Wexner Medical Center at the Ohio State University, poster competition.

P - 88

Neuroimaging in a better understanding of romantic and sexual relationships

Crager

***Savannah Newsom, Cindy Underwood, Cyndi Y. Gibbs, Mentor,* Department of Imaging Sciences, College of Science and Technology**

Nearly all people will experience both romantic love and sexual desire throughout their life. Experiencing love and the act of feeling loved is an important component of an individual's life. Nearly 90% of people in the United States will get married; with a third of these marriages ending in divorce. Often time's romantic love and sexual desire are confused as being the same emotion in today's society. Recent advances in medical imaging have allowed a better understanding of how the brain reacts to certain stimuli. Magnetic resonance imaging (MRI) has demonstrated that when exposed to visual stimuli, certain components of the brain will react. Functional Magnetic Resonance (fMRI) allows medical professionals the ability to map the portions of the brain that are affected by love and sexual desire.

Presented at the 11th Annual Magnetic Resonance Seminar, hosted by Wexner Medical Center at the Ohio State University, poster competition.

P - 89

Not a single drop: Using magnetic resonance in imaging patients with fetal alcohol syndrome

Crager

***Alex Smith, Jordan Rainwater, Justin Hall, Cyndi Y. Gibbs, Mentor,* Department of Imaging Sciences, College of Science and Technology**

Fetal Alcohol Syndrome (FAS) was first published in medical literature in 1968. It refers to anomalies caused by alcohol consumption during pregnancy. These include abnormal facial features, reduced size of newborns, and behavior and cognition problems in children. Each year there will be about 5,000 -12,000 babies born with fetal alcohol syndrome. The sad truth regarding FAS is that it is the major cause of birth defects in the United States. The effects of the disease are long term, resulting in many challenges for those individuals affected by FAS. Magnetic Resonance (MR) has demonstrated a significant role in the early intervention of FAS. The detection of brain abnormalities can be diagnosed much earlier with MR than with other imaging modalities. Advances in magnetic resonance will allow for a better understanding of the disorder. This will provide better treatment options for the innocent children affected by this disease allowing for a more productive life in the near future.

Presented at the 11th Annual Magnetic Resonance Seminar, hosted by Wexner Medical Center at the Ohio State University, poster competition (1st place award).

P - 90

The measurement of the radioactivity in an outcrop of Ohio Shale

Crager

***Joshua Allen, Dr. Ignacio Birriel, Mentor,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

Ohio Shale is a fragmented rock that is part of the black organic shale family that is found all over Kentucky. An outcrop of Ohio Shale, found in the northern part of Cave Run Lake, was used for this study. The outcrop can be split into two parts, the first consisting of only Ohio Shale while the second part consisting of the bottom most layer being the Ohio Shale covered by a non-radioactive Three-Lick bed. Along the bottom of the outcrop measurements were made of only Ohio Shale while along the surface of the outcrop measurements consisted of both the uncovered Ohio Shale and the Ohio Shale covered by a layer of Three-Lick bed were made. A GAMMA-SCOUT radioactive detector was used to measure the radioactivity. It is a standard radiation detector with a halogen filled Geiger-Müller counter tube.

P - 91

Mathematics and chess: A queen approach

Crager

***Bethany Alloway, Iris Johnson, Michael McGinnis, Dr. Doug Chatham, Dr. Duane Skaggs, and Dr. Robin Blankenship, Mentors,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

The N + k Queens Problem requires the placing of N Queens and k Pawns on an n x n chessboard in such a way that no two Queens attack each other. Previously, we developed the Michael-Biswas Gravity Algorithm for placing the maximum number of Queens on an n x n board. Recently, we have been exploring an expansion of this problem by placing non-attacking Queens and Pawns on an *n x n* torus.

P - 92

Comparison between different classification techniques

Crager

***William Burriss, Heba Elgazzar, Mentor,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

The goal of this project is to study different classification techniques and to compare between these techniques. Classification is one of the basic tasks in machine learning. These techniques include the K-Nearest Neighbor (KNN) classifier, Naive Bayes classifiers, and logic-based techniques such as rule-based classifier and decision trees. We applied the classification techniques over medical data, since it is always of much importance and difficult to mine. We used Breast cancer data that has eight features. We need to classify the data so that it is either a benign tumor or malignant tumor. This research is supported by MSU Undergraduate Research Fellowship.

P - 93

Utilizing the television show, "The Big Bang Theory," as an educational tool in the teaching of beginning level physics courses.

Crager

***Brittany Sexton, Dr. Kent Price, Mentor,* Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

Scenes from the hit television show "The Big Bang Theory" are analyzed for physics content that may be used in the teaching of introductory physics. By selecting scenes that depict the use of physics, students obtain knowledge in an enjoyable way that actually correlates with the topic they're learning in class. An example of such a scene is in Season one, Episode 2, The Big Bran Hypothesis, when Sheldon and Leonard are moving Penny's couch up the stairs. This scene is analyzed, including the assumptions made by Sheldon and Leonard that there was no friction, and compared to the more realistic situation in which friction would be present. This scene can be shown in the classroom when learning to calculate forces; first without friction, as Sheldon and Leonard assumed, and then with friction afterward. The end goal is to create an enjoyable and relatable learning tool for students when they're learning beginning physics. This project is supported by a MSU Undergraduate Research Fellowship.

P - 94

A nurse-driven protocol to reduce the prevalence of catheter associated urinary tract infections (CAUTI).

Crager

***Andrew Alsup, *Kristi Gomez, *Hannah Pollitt, *Samantha Royse, Michelle McClave, Mentor,* Department of Nursing, College of Science and Technology**

Catheter associated urinary tract infections (CAUTI) continue to be an issue in healthcare facilities despite extensive research and adopted hospital protocols. The Centers for Disease Control and Prevention (CDC) state that CAUTIs have been associated with increased morbidity, mortality, healthcare costs, and inpatient length of stay. It has been estimated that 13,000 deaths per year are associated with CAUTIs in the United States. The national implementation of the Comprehensive Unit-based Safety Program (CUSP) to eliminate healthcare-associated infections recommends specific indications for the use of indwelling catheters, as well as prompt removal of urinary catheters within the hospital setting. The purpose of this study is to develop a nursing-driven protocol to enforce current catheter policies with the desired outcome of reducing the incidence of CAUTIs in one intensive care unit. Enforcement of catheter policies will also be discussed, including monitoring for signs and symptoms of urinary tract infections, tracking days catheters have been in place, and providing appropriate catheter care.

P - 95

Pressure ulcers: Protocols aimed toward prevention of skin breakdown in hospitalized patients

Crager

***McKenzie Baker, *Allison Gregory, *Kelli Hylton, *Courtney Spry, Michelle McClave, Mentor,* Department of Nursing, College of Science and Technology**

Pressure ulcers are an injury to skin and underlying tissue resulting from prolonged pressure on the skin from patient immobility, prolonged use of a medical device, shear, or friction. Each year, according to the Agency for Healthcare Research and Quality (AHRQ), more than 2.5 million people in the United States develop pressure ulcers. Due to the significance of this problem, many policies have been initiated to prevent pressure ulcer formation in the inpatient hospital setting. Policies currently in place on one nursing unit include performing complete skin assessments on admitted patients and including the use of risk assessment tools such as the Braden Scale. In order to address a frequent lapse in adherence to the policies, and prevent complications resulting from the development of skin breakdown, we will investigate evidence based practice and suggest an implementation plan to improve inpatient policy compliance.

P - 96

Hospital protocols and nursing compliance with use and reuse of electrocardiogram (ECG) lead wires.

Crager

***Cassandra Becraft, *Mornisa Bocook, *Samantha Carey, *Megan Conley, *Laken Keathly, Michelle McClave, Mentor,* Department of Nursing, College of Science and Technology**

ECG lead wires are commonly used in hospital settings within a wide variety of healthcare units. This results in lead wires being exposed to many environmental surfaces. Due to the contact of the lead wires with various surfaces, they have the potential to carry many pathogens that may lead to patient infection. These wires also often come into contact with patient wounds and bodily fluids. The purpose of our study is to investigate current policies for the disinfection of ECG lead wires on a progressive neurological unit. Following our investigation, we will synthesize the recommendations by the Association for the Advancement of Medical Instrumentation (AAMI) regarding the disinfection of ECG cables and lead wires. Suggestions will be made for implementation specific to the unit in question, as well as healthcare in general.

P - 97

Compliance with protocols to prevent left ventricular assistive device (LVAD) driveline infection.

Crager

***Abbi Chandler, *Sarah Gripshover, *Anna Hickam, *Brittany Humphrey, *Heather Liming, Michelle McClave, Mentor,* Department of Nursing, College of Science and Technology**

Over the last several years, new technology has been developed to lengthen the time a patient can remain on the list as a candidate for a heart transplant. One of the most common means to increase this timeframe is the implantation of a left ventricular assistive device (LVAD). Infection is not uncommon following the placement of the LVAD driveline within the first year. Noncompliance with recommended protocols can play a huge factor in the increase of infection rates among these patients on one progressive cardiac unit. The purpose of this project is to investigate an evidence-based protocol designed to increase compliance in order to reduce driveline infection rates. Recommendations will be made to promote compliance of the protocol among nurses caring for LVAD patients on progressive cardiac units.

P - 98

Why won't you take your medicine? Modern day medication noncompliance.

Crager

***Felicia Davis, *Rachel Porter, *Shelby Rosenberg, *Dustin Stamper, *Hannah Toy, Michelle McClave, Mentor.* **Department of Nursing, College of Science and Technology**

Medication noncompliance causes between 30-50 percent of treatment failures and leads to healthcare costs of up to $289 billion annually. Noncompliance also leads to approximately 125,000 deaths each year. There are a variety of factors that can lead to medication noncompliance or refusal in the inpatient hospital setting. However, many nurses simply document refusal without investigating the reason behind the choice. One neurological nursing unit's policies on handling patient medication refusal will be reviewed, and strategies will be investigated regarding evidence based practice options to address this costly occurrence both within an inpatient setting and in outpatient settings. Resources will also be discussed concerning the need for additional education of healthcare providers and patients, as well as other methods to overcome the barriers that lead to medication noncompliance.

P - 99

Increasing medication administration protocol compliance to prevent medication errors

Crager

***Bethany Foister, *Hannah Gamble, *Laken Grierson, *Mikayla Jones, Michelle McClave, Mentor,* **Department of Nursing, College of Science and Technology**

Medication errors are a recurring problem in hospitals and other healthcare facilities. Such errors can lead to decreased patient satisfaction, poor patient outcomes, and mortality. Every year, over one million medication errors occur due to staff burnout, a lack of education, insufficient nurse-to-patient ratio, and failing to follow agency- specific protocols. The current medication administration protocols in place for a progressive care unit are cumbersome in nature and do not provide a definitive means of reducing medication errors. Although protocols are in place, compliance with all protocols is not consistently followed by all the nurses on the unit under study. The Institute of Medicine (IOM) recommends an increased use of information technology, as well as improved labeling and packaging of medications to positively impact the occurrence of medication administration errors. An implementation plan will be proposed for the clinical unit.

P - 100

Review of processes and development of an evidence based protocol for hand-off reporting.

Crager

***Karen Hilt, *Tayler Lowe, *Justine Peters, *Mikayla Sherman, *Cherokee Skidmore, Michelle McClave, Mentor,* **Department of Nursing, College of Science and Technology**

In today's hospital setting, nursing hand-off is an essential piece of continuity of care. Lack of consistent implementation of a standard change of shift report can lead to a decrease in positive patient outcomes. For example, lack of appropriate communication has been found to lead to medication errors and omissions in care. The Quality and Safety Education for Nurses (QSEN) initiative advocates for teamwork and collaboration, which is especially important in regards to the risks associated with hand-off report. On one particular cardiac telemetry unit, the policy in place for change of shift report outlines the use of the Situation Background Assessment Recommendation (SBAR) communication format, but lacks specificity. There is a lack of consistency with the method of hand-off report on this unit, leading to a discrepancy in effective communication between nurses. The aim of this study is to investigate recommendations for nursing hand-off communication in concordance with the QSEN competency of team work and collaboration. Recommendations for a revised policy for the cardiac telemetry unit will also be addressed.

P ▫ 101

Me + RSA = "M(e)RSA": How you can prevent the spread of MRSA

Crager

***Samantha McCoy, *Rachel Prater, *Shelby Toy, *Lauren Wilson, Michelle McClave, Mentor,* Department of Nursing, College of Science and Technology**

Methicillin-resistant Staphylococcus aureus (MRSA) is a prevalent bacterial infection that is seen throughout hospitals and communities. This organism is associated with many common misconceptions. The fallacy surrounding MRSA stems from a general lack of knowledge concerning aspects from transmission and treatment to an overall misunderstanding of the organism itself. The purpose of our project is to investigate handling of MRSA-positive patients on an inpatient transplant unit. Specific objectives of our project include: identifying applicable unit protocols, determining compliance with recommended precautions, explaining patient repercussions when recommended protocols are not followed, and developing an educational plan for patients and healthcare professionals. Finally, implementation plans will be recommended in accordance with the Centers for Disease Control and Prevention (CDC) guidelines.

P ▫ 102

Improving compliance of infection control practices in the healthcare setting

Crager

***Ashley Sexton, *Claire Doyle, *Lacey Chisholm, *Whitney Alvey, Michelle McClave, Mentor,* Department of Nursing, College of Science and Technology**

Infectious organisms are a major problem in the healthcare setting today, causing poor patient outcomes and even death. The Centers for Disease Control and Prevention (CDC) found that most deaths related to infectious organisms occur in the inpatient healthcare setting. Nurses play a pivotal role in preventing the spread of infectious organisms and managing patient exposure. The Joint Commission's 2015 National Patient Safety Goals include the use of the CDC's hand hygiene guidelines to prevent the spread of infection in the healthcare setting. The Joint Commission also recommends using infection prevention guidelines and implementing Personal Protective Equipment (PPE) for patients identified as carriers of infectious organisms. Healthcare worker non-compliance with evidence based guidelines can increase the spread of infectious organisms. Our goal is to improve patient outcomes by instead spreading awareness of the CDC and The Joint Commission's evidence based guidelines. A combination of compliance with facility policy and patient participation can promote overall positive health outcomes for patients.

P ▫ 103

Caution! CLABSI on the bloodstream highway: Clinical prevention of central line associated bloodstream infections (CLABSI)

Crager

***Allison Simpson, *Jessica Thacker, *Chelsea Thornberry, *Ashley Walters, Michelle McClave, Mentor,* Department of Nursing, College of Science and Technology**

In 2011, an estimated 70,000 primary bloodstream infections occurred in acute care hospitals within the United States. Central line–associated blood-stream infections (CLABSI) are one of the most deadly types of hospital-acquired infections, with a mortality rate up to 25 percent. The purpose of our study is to compare the current CLABSI bundles recommended by The Joint Commission with hospital-specific policies, as well as current practice on one specific clinical unit. We will also address the negative outcomes of patients who develop CLABSI, with the aim of proposing interventions to decrease the prevalence of CLABSIs on this unit.

P - 104

Cholinergic-glutamate interaction in learning and memory

Crager

***Zachary Abbott, Dr. Ilsun M. White, Mentor,* Department of Psychology, College of Science and Technology**

Disruption of muscarinic receptors, a subtype of cholinergic receptors, impairs learning and memory. Glutamate dysfunction, particularly NMDA receptors, is closely linked to age-related deficits and Alzheimer's disorder. We examined the cholinergic-glutamate interaction in learning and memory, using an animal model. Male Wistar rats were trained in the fixed ratio 5 (FR5), which required five lever-presses for a food pellet, until they reached the behavioral criteria. Rats received scopolamine (muscarinic receptor antagonist), MK801 (NMDA receptor antagonist), scopolamine+MK801, or saline. We measured the latency of the first lever-press, runtime to complete five lever-presses, and pellet retrieval. Compared to saline, scopolamine- or MK801-alone delayed the first response and runtime. Neither drug affected food retrieval. Compared to scopolamine, a combined scopolamine+MK801 produced faster first response, longer runtime, and a severe deficit in food-retrieval. Our data suggest that activation of muscarinic and NMDA receptor is necessary for successful initiation and completion of response requirement, but may mediate different aspects of learning and memory. Given that MK801 and scopolamine primarily target the prefrontal cortex and the hippocampus, the site of muscarinic-NMDA interaction is likely within these brain regions. Zachary Abbott is a recipient of the undergraduate research fellowship. Supported by NIH grant: R15DA015351.

P - 105

Attention deficit disorder and driving

Crager

***James Casper, Max J. Prowant, Tesla Henderson, Dr. Gregory M. Corso, *Mentor,* Department of Psychology, College of Science and Technology and *Dr. Nicholas Kelling,* University of Houston Clear Lake**

The purpose for this study is to detect and identify differences in driving behavior between individuals with attention deficit disorder (ADD) and individuals not diagnosed with ADD. Two groups of participants, 10 individuals with ADD and 10 individuals without ADD, will be shown a series of videos as if the participant was driving down a road. Within the videos are events that will distract the driver. The dependent variable will be the time to "exit the road" given a match between a previous designed exit number and the exit sign. Differences between the groups for the time to exit and the accuracy of the decision will be evaluated. The Test of Variables of Attention and the Connors Continuous Performance Test will be correlated with driving performance. For the ADD participants who are off-medication we expect differences in decision time and a reduction in decision accuracy relative to the same participants on medication. Additionally, we expect differences in decision time and decision accuracy between ADD on-medication and Non-ADD participants. To put it another way, even though medication may eliminate some of the behaviors associate with ADD, driving performance may not be comparable to driver who have not been diagnosed with ADD.

P - 106

Diversity threat: Reminders of increasing diversity encourage interracial anxiety and avoidance

Crager

***Amanda R. Clark, Caleb Hinds, Melissa Craft, Wesley Wattenberger, Kristina M. Deem, Martina Wagoner, Richard Thomas, Pamela M. Lacy, Dr. David Butz, Mentor,* Department of Psychology, College of Science and Technology**

Despite increasing opportunities for interracial contact, many individuals find the prospect of interracial contact anxiety-provoking. In the current experiment we examined the hypothesis that awareness of increasing diversity evokes threat responses and precipitates interracial anxiety and avoidance. White/Caucasian participants (N = 181) were randomly assigned to either consider the topic of increasing racial diversity, general diversity, or physical activity by writing a brief analytical essay. Participants then reported their interracial anxiety and avoidance and described an imagined interracial interaction. Results indicated that the concept of general diversity evoked similar levels of interracial anxiety and avoidance as racial diversity and greater anxiety and avoidance than physical activity. Imagined interactions were coded on a number of dimensions related to comfort in interracial interaction, however descriptions of interactions did not reliably differ across experimental conditions. Findings will be discussed in terms of their implications for understanding sources of interracial anxiety and avoidance. This research was supported by a MSU Undergraduate Research Fellowship awarded to the first author.

P - 107

She's nice: Children's superficial vs. elaborated descriptions of their parents

Crager

***Joshua Combs, Evan S. Rollins, Dr. Shari Kidwell, Mentor,* Department of Psychology, College of Science and Technology**

The current study examined how children described their perceived relationship with their primary-caregivers. It was hypothesized that children with high-risk/insecure attachments to their parent would (a) describe the relationship positively but superficially, (b) show evidence of unhealthy, internalized views of the parents, and (c) display less positive affect during their interview. The families were predominantly low-income, lived in Appalachia, and were enrolled in a larger longitudinal study. Twenty-one families participated, when children averaged 12 years. Children were asked to talk about their primary-caregiver and their relationship with them for five minutes. Three five-point rating scales were used to measure the three hypothesized individual differences in the Five Minute Speech Samples. The School Age Assessment of Attachment (Crittenden, 2005), a projective story-telling interview, was classified by separate blind coders. Findings revealed that children with high-risk attachment patterns gave less evidence for their perceived positive relationship than children with secure/low-risk attachments. Only one child verbalized criticism of her parent. These results suggest that most at-risk children will be unlikely to say anything bad about their parent, which has implications for clinical interventions. This research was supported by MSU RCPC and KY NSF grants.

P - 108

2015 brain awareness program: Brain drawing contest

Crager

+Kinetta N. Crisp, James B. Stark, Jenna L. Huff, Allison B. Fletcher, Sarah R. Caudill, Zachary S. Abbott, Autumn M. Rice, Tori Dennie, Sarah Baker, Josie Singleton, Richard Ward, Chris Hobert, Dr. Ilsun M. White, Mentor, **Department of Psychology, College of Science and Technology**

The Regional Brain Drawing Contest is a part of the Regional Brain Awareness Program, which emphasizes community outreach and science information. The aim of the Brain Drawing Contest is to enhance brain awareness among students (K-12th) in our service region. Drawing themes were specific to grade. K-1st graders explained how their brain helps them; 2nd-4th grades focused on how their brain is special; 5th-6th grades focused on brain health; 7th-8th grades used similes and compared the brain to an object. This year, we received nearly850 entries (K-12). Judging was based on originality, scientific accuracy, and overall design. Preliminary judging was done by a group of 13 students. Award judging was done by the committee, which consists of eight faculty members from different areas (Art, Business, Education, English, Neuroscience and Psychology) and a community representative. The dean of the College of Science and Technology presented the awards at the award ceremony, which was held on March 10 in the Reed Hall.

P - 109

Ethnicity and emotion

Crager

+Kinetta N. Crisp, Zachary S. Abbott, Jenna L. Huff, Dr. Ilsun M. White, Mentor, **Department of Psychology, College of Science and Technology**

Reading the emotions of others accurately provides advantages and also reflects the ability to adapt in social situations. We examined the effects of participant's ethnicity on emotion recognition. A total of 52 subjects participated in this study. The DANVA-2 task, which consisted of four subsets of emotion categories with visual and auditory stimuli, was used. Following presentation of each stimulus, the participants were asked to select: happy, sad, angry, or fearful, and their ability to discriminate emotion was defined by accuracy. A drug survey was used to exclude participants with a history of drug use. Overall, compared to Caucasians, African-Americans made more errors in judging emotional expressions, particularly judged 'angry' expression less accurately than Caucasians did. In DANVA-2, a majority of facial expressions are faces of Caucasian adults and children. Thus, a lower accuracy in recognizing out-group members supports the notion of cultural advantage that discriminating emotion of members from the same culture or in-group may increase the accuracy by processing facial features of same race more accurately than faces of other races. A further study is warranted.

P - 110

Is depression anger turned inwards? Children's angry responses are associated with unhappiness

Crager

+Darrin R. Greene, +Gabriela L.Alshafie, Evan S. Rollins, Dr. Shari Kidwell, Mentor, **Department of Psychology, College of Science and Technology**

Irritability is a common feature of depression, particularly among children (APA, 2014). Self-reported anger in response to threat has been associated with depression symptoms for both clinical and normative children (Nelson & Finch, 2000). This study examines the relationship of these constructs among a sample of moderate-risk, rural early adolescents. Nineteen children participated (approximately 50 percent male, average age=12 years). Subjects completed the Piers-Harris 2 (Piers, Harris, & Herzberg, 2002), which includes subscales for perceived happiness and behavior. They also completed the Children's Inventory of Anger (Nelson & Finch, 2000), particularly subscales reflecting the degree of anger that would be experienced in physically threatening and peer rejection-related scenarios. Children's anger regarding both peers and physical threat was negatively related to their happiness scores. These findings held for peer situations even with Piers-Harris inconsistency scores controlled. These results have important implications for clinicians working with 'angry' youth. This research was supported by MSU RCPC and KY NSF grants.

P-111

Parent's approach to emotions and their children's coping strategies

Crager

***Ashley N. Hamm, *Jessica L. Shepherd, Kayla Nichelson, Ashley N. Morris, Dr. Shari Kidwell, Mentor,* Department of Psychology, College of Science and Technology**

Emotion skills are an integral aspect of children's adjustment and parents have considerable influence on them. The current study explores the connections between parent's approach to emotion and their children's coping. We hypothesized that parents who were aware and accepting of emotions as useful would have children who reported utilizing more adaptive coping strategies. This data was collected as part of an ongoing longitudinal study among families of moderate socioeconomic and psychological risk. Nineteen families participated in the study when the children were twelve years old. An interview (based on Gottman, Katz, Fainsilber & Hooven, 1997) was used to assess parent's approach to negative emotions, specifically sadness and anger. A complementary child interview was administered separately. Children's descriptions of the coping strategies they used when angry and sad were rated on several scales. Preliminary data suggests that parents who were accepting of negative affect tended to have children with more adaptive and less avoidant coping. This research was supported by MSU RCPC and KY NSF grants.

P-112

Improvement in explicit knowledge of critical thinking concepts following completion of critical thinking lessons

Crager

***Amber Hume, Jeffery Kestner, Madison Mantz, Michael Cunningham and Dr. Wesley White, Mentors,* Department of Psychology, College of Science and Technology**

Critical thinking is valued, and so providing effective critical thinking instruction is important. This research assessed online lessons designed to teach critical thinking. As a starting point, the lessons used the Paul and Elder model, which conceives of critical thinking as analyzing content into parts, evaluating parts or their relations, and assessing the adequacy of one's analysis and evaluation (metacognition). The lessons operationalized these abilities and assessed students' knowledge and application of them. Freshmen undergraduates completed the 17 lessons in a computer lab. A pretest and posttest assessed students' improvement in knowledge of the concepts and processes contained in the lessons. Virtually all students improved from pretest to posttest, gains were variable, the average gain was modest, and improvement primarily occurred in knowledge of conceptualizations related to earlier steps in the critical thinking process. Results indicated where students had strengths and weaknesses, and where critical thinking instruction education might initially focus. Results also suggested that instruction individualized to each student's capabilities would be desirable, and that substantial training may be required to produce improvement in explicit knowledge of critical thinking concepts.

P-113

Do we discriminate emotion better under stress?

Crager

+Jenna L. Huff, James B. Stark, Autumn M. Rice, Dr. Ilsun M. White, Mentor, **Department of Psychology, College of Science and Technology**

Our ability to discriminate emotion is an adaptive behavior in social situations. Inaccuracy in recognition of facial expression is associated with maladaptive behavior and psychiatric disorders. The present study examined the ability of 68 young adult students to recognize emotional expression under stressful life events and chronic strains. The DANVA-2 task, which consisted of subsets of faces and voices with four emotion categories of visual and auditory stimuli, was used. After presentation of each stimulus for 2 second, the participant was required to make a selection: happy, sad, angry, or fearful. A functional ability to discriminate emotion was defined by accuracy under each subsets of emotion category. A stress survey assessed participant's stress level. A drug survey assessed the history of drug use. Compared to the low stress group, those with middle and high level stress showed a significantly greater accuracy in discrimination of negative emotions. There was no interaction between stress and sex. Our findings are in agreement with previous report that moderate stress improves performance in working memory tasks, likely via the prefrontal cortex. However, increased accuracy in discrimination of negative emotion in our high-stress group may reflect the involvement of different brain regions.

P-114

2015 Brain Awareness Program: School visits

Crager

+Jenna L. Huff, Dr. Ilsun M. White, Mentor, **Department of Psychology, College of Science and Technology**

Our regional brain awareness program focuses on community outreach. The goal of our program is to promote brain health among youth in the Eastern Kentucky through lectures, research presentations, and the distribution of educational material and science information. This year's goal was to target over 1000 people in the region, and we exceeded our goal by making visits to over 20 schools in 13 counties across Eastern Kentucky, including 13 high schools, 4 middle schools, and 7 elementary schools. School visits involved lectures on the adverse effects of alcohol and psychostimulants on the body, brain and behavior. Lectures also included presentation of research outcomes from the animal and human research conducted in the Neuroscience laboratory at Morehead State University. Each lecture was followed by an active discussion session about drugs that disrupt normal brain function. Educational material on brain health and brain research was distributed. This year's program was sponsored by the Psychology Department at Morehead State University, the Society for Neuroscience, the Dana Foundation, and the National Institutes of Health.

P-115

Feelings about infidelity: Comparing the victim and perpetrator perspectives

Crager

Allexa L. Koeninger, Dr. Laurie L. Couch, Mentor,* **Department of Psychology, College of Science and Technology

Most studies investigating the aftermath of infidelity suggest that victims and perpetrators both experience negative emotions after cheating. Our study compared infidelity-related emotion reports of both perspectives simultaneously. Based on previous work, we hypothesized that victims and perpetrators would report similar emotions when thinking back on infidelity. A survey about eleven post-infidelity emotions [via the Differential Emotions Scales (Izard, 1977) and the State Anxiety Scale (Speilberger, et al., 1983)] was completed by 74 who reported being infidelity victims and 108 who reported being perpetrators. A MANOVA, using participant type as the IV and the eleven post-infidelity emotions as the DVs, was conducted to test the hypothesis. Results partially supported our hypothesis. Victims' and perpetrators' feelings of anxiety, interest, enjoyment, anger, disgust, or contempt, were very similar; however, perpetrators reported greater surprise, fear, distress, shame, and guilt than victims when thinking back on the infidelity.

P-116

On the mend: Attachment's role in getting over romantic breakups

Crager

***Macy T. Kootz, Dr. Laurie L. Couch, Mentor,* Department of Psychology, College of Science and Technology**

Links between attachment style and recovery from romantic breakups were assessed through an online survey of 198 college women. Based on previous literature, it was hypothesized that, independent of the time since breakup, those with secure attachment would experience fewer signs of unresolved breakups than others. To test the hypothesis, a MANCOVA was conducted using time since the breakup as the covariate, attachment style as the independent variable, and four measures of post-breakup resolution as the dependent variables. Results revealed that those with secure attachment reported less breakup distress, post-breakup negative adjustment, and psychological "unfinished business" than those with preoccupied or fearful (i.e., insecure) attachment styles. Attachment style did not predict post-breakup relationship preoccupation. These results will be discussed in terms of implications for relationship counseling.

P-117

Simple acts of metacognition can foster acquisition of aspects of critical thinking

Crager

***Madison Mantz, Jeffery Kestner, Dr. Wesley White, Mentor,* Department of Psychology, College of Science and Technology**

An important preliminary to evaluating an argument is to divide it into its parts, such as Information, Inference (a conclusion that can be derived from the Information), and Implication (a belief or action one could adopt if the Inference seems reasonable). Metacognition involves critiquing one's thinking. This study examined whether metacognition could promote the development of the capacity to identify Inference and Implication. The participants were undergraduate students, who completed lessons in a computer lab. The first two lessons contained background information on critical thinking and defined and illustrated Inference and Implication. In each of the next three lessons, participants read a different argument and were asked to identify statements that contained the argument's Inference and Implication. After each response, participants in the control group were shown a model of the correct response. Participants in the experimental group saw the model, compared their response to it, and scored their response using simple scoring criteria (metacognition). Only participants who engaged in metacognition improved in their ability to identify Inference and Implication across arguments. The operationalization of metacognition used here can foster acquisition of aspects of critical thinking.

P-118

Do parents with depression and trauma have a blind spot for child anger?

Crager

***+Ashley N. Morris, Kayla Nichelson, Dr. Shari Kidwell, Mentor,* Department of Psychology, College of Science and Technology**

Meta emotion is described as the reactions, thoughts, and feelings one has about emotions (Gottman et al., 1997). Meta emotion-related processes may explain why trauma and depression have pronounced effects on parenting. This study evaluates trauma and depression in association with parents' coaching of their child's negative emotions. This is part of a larger longitudinal study that initially consisted of 44 families from eastern Kentucky. Trauma was coded using the Traumatic Antecedents Interview Scale (Perry & Herman, 1992), applied to the Adult Attachment Interview (George, Kaplan, & Main, 1985). Parents' depression was measured with the Center for Epidemiologic Studies Depression Scale (Radloff, 1977). Approach to child sadness and anger were rated from an interview based on Gottman et al.'s work. Higher levels of parental trauma and depression were associated with lower awareness of their child's anger and coaching about anger. These results have significant implications for parent-child clinicians and researchers. This research was supported by MSU RCPC and KY NSF grants.

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Empathy invokes negative responses to female sexual minorities

Crager

***Andrew G. Preston, Dr. David Butz, Mentor,* Department of Psychology, College of Science and Technology**

Previous work suggests that prejudice may be due, in part, to a lack of empathy for minority group members. The current research builds upon this previous work by examining the role of empathy in shaping attitudes affecting sexual minorities. We hypothesized that empathy would promote positive responses; that empathic individuals would exhibit more positive responses to sexual minority group members than their lower empathy counterparts. Heterosexual participants (N = 141) completed a survey to gather demographic information and level of empathy. Participants were also presented with music written by ostensible composers and evaluated the songs. The target composition included a description in which the gender and sexual orientation of the composer were varied. A significant interaction of target orientation, target gender, and empathy emerged. Unexpectedly, individuals high in empathy reported more negative responses (i.e., lower perceived talent and less recommended funding) for gay females compared to heterosexual females. This was not evident in the male composer condition, or among those low in empathy. Implications of this work for understanding the nuanced role of empathy in responses to sexual minorities will be discussed. This research was supported by an undergraduate research fellowship.

P - 120

Correlating measures of attention deficit disorder

Crager

***Max Prowant, Zoe Becerra, *Hannah Bowman, Dr. Gregory M. Corso, Mentor,* Department of Psychology, College of Science and Technology**

In a binary classification task, participants are required to remember a set of items and then are shown one item (a probe) at a time and asked if the probe item is or is not a member of the memory set. Research has shown that has memory set size increases there is a linear increase in the correct response times associated with the probe item. This study was designed to assess whether the response times resulting from a binary classification task are different for individuals with Attention Deficit Disorder (ADD) relative to individuals who do not have ADD. Twenty individuals with ADD and 20 individuals without ADD will complete a series of clinical assessments for ADD. Then a binary classification task will be administered. For this task, a set of 2, 4, 6, or 8 letters will be memorized. A series of letters will then appear. The task for the participant will be to indicate whether the displayed letter was in the memorized set or not. The question is: Do the response times from both groups follow the same pattern? Correlations between the binary classification task and other clinical tasks that are used to assess ADD will be determined.

P - 121

Religious satisfaction as a predictor of behavioral health practice

Crager

***D. Alexander Pruitt, Andrew G. Preston, Daniel S. Elmlinger, Dr. Tim Thornberry, Mentor,* Department of Psychology, College of Science and Technology**

Research shows that religion and spirituality can affect overall well-being in young people but the mechanism by which this occurs is debated. It is speculated that religion and spirituality affect well-being in that these institutions offer more social opportunities, thereby increasing overall well-being. However, other work suggests that individuals who experience doubt within their religion report greater distress and less well-being. There is a lack of research examining exactly how religious affiliation and belief satisfaction affect treatment-seeking behavior and how distress may translate to physical aspects of health. This study examines the relationship between religiosity and mental health treatment seeking behavior with a rural college sample. Participants completed an internet survey about physical health, mental health, health behaviors, health awareness, and religiosity. Participants were asked about belief satisfaction, tendencies to experience doubt in faith, religiosity, and how they utilize mental health services available to them on and off campus. We hypothesized that higher satisfaction with one's personal belief system would be associated with lower reported physical and mental distress, and a decreased likelihood to seek treatment should distress be present. Results will be discussed in terms of the relationship between religion, belief satisfaction, and behavioral health.

P - 122

Companion animals as social catalysts: A behavioral health perspective

Crager

***Wyatt A. Smith, Andrew G. Preston, Dr. Tim Thornberry, Mentor,* Department of Psychology, College of Science and Technology**

The animal-human bond in regards to health benefits has been a controversial and often contradictory subject in social psychology. Previous research suggests that pet ownership and social relationships with pets can serve as contributors to positive health. Unfortunately, much of the previous empirical focus lies on elderly subjects based in nursing homes. With young adults being a prime population of pet owners, more work should be devoted to examining how relationships with animal companions affect college age health. This study examines how the strength of the relationship between a participant and an animal companion may relate to composite scores of perceived isolation, depression, anxiety, and stress. We expect those participants who report dissatisfactory relationships with pets will exhibit higher scores of social isolation, stress, and low scores of overall mental well-being. Participants were recruited from a cloud-based subject pool to partake in an internet survey about physical and mental health, health behaviors, and health awareness. Within the public health survey are questions pertaining to pet ownership and personal views of animals in general. Findings are discussed in terms of how animal relationships may affect stress, serve as a social group, and promote positive health behaviors amongst college age individuals.

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Simple learning requires activation of dopamine and glutamate receptors: NMDA-D1 receptor interaction

Crager

***James Stark, Dr. Ilsun M. White, Mentor,* Department of Psychology, College of Science and Technology**

Dopamine has been implicated in reward, attention and learning. Activation of glutamate, particularly NMDA, receptors is known to be critical in learning and memory. The present study examined glutamate-dopamine interaction in simple learning and memory. Male Wistar rats were trained on a simple task, a fixed ratio 5 (FR5), which required the animal to make five lever-presses to receive a food pellet until they reached behavioral criteria. During the drug phase, rats received SCH23390 (dopamine D1 antagonist), MK801 (NMDA antagonist), or both. All injections were given intraperitoneally, before behavioral testing. Behavioral measures included the latency of the first lever-press, runtime for 5 lever-presses, and food retrieval. SCH23390 alone increased the latency of first lever-press and runtime, compared to saline. A similar pattern was seen with MK801 treatment. However, SCH23309-induced deficits were reduced following coadministration of MK801 and SCH23390. Given that MK801 increases dopamine indirectly, such reversal by MK801 is likely due to enhanced dopamine transmission in the brain. Our data suggest that activation of dopamine and glutamate receptors is required for successful learning and memory and provide strong evidence for D1-NMDA receptor interaction in simple learning. James Stark is an undergraduate research fellow. Supported by NIH grant: R15DA015351

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Amphetamine and morphine may produce symptoms of acute withdrawal via a common dopamine-dependent pathway

Crager

***Richard Ward, Zachary Abbott, Kristin Morris, Dr. Wesley White, Mentor,* Department of Psychology, College of Science and Technology**

The research assessed whether amphetamine and morphine produced similar reductions in activity 12 to 24 hours after administration. A reduction during this time may be an indicator of an acute withdrawal. The research also assessed whether administration of a dopamine D1 receptor antagonist could block any reduction in activity produced by amphetamine or morphine. Different groups of rats were administered saline, amphetamine (2.0 mg/kg), or morphine (5.0 mg/kg), followed 30 minutes later by saline or a dopamine D1 receptor antagonist (0.05 mg/kg SCH 23390). Amphetamine and morphine reduced activity 12 to 24 hours after administration, and this reduction was blocked by administration of D1 antagonist. Results suggest that amphetamine and morphine produce acute withdrawal by initially affecting a common pathway that uses dopamine as a neurotransmitter. This research was supported by NIH grant DA015351.

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Kentucky's prison population: Changing influences over time

Crager

***Lanora Johnson, Sarah Westfall, Dr. James R. Masterson and Dr. Paul D. Steele, Mentors,* Department of International and Interdisciplinary Studies, Caudill College of Arts, Humanities, and Social Sciences**

In our study, we replicate Spelman's approach and investigate what has influenced changes in Kentucky's prison population and spending, albeit with some methodological adjustments due to our single-state sample. Our multivariate time-series technique determines the simultaneous influence of eighteen independent variables on Kentucky's prison populations and spending, and the results are compared to Spelman's findings for the nation as a whole. Further, we examine the influence of these factors within four discrete time periods, showing that racial, political, and economic forces change dramatically in their influence on punishment in the state over time. We conclude with a discussion of our new research, investigating differences in punishment between high- and low-growth states, between states with high and low rates of poverty and between states with high and low rates of minority residents. This project is partially supported by the honors UG Research Fellowship.

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Highlighting the successes and challenges of developing a campus wellness program: The MSU4U social media campaign and international support group

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Erika Cordle, *Alyssa Shifflett, Tara Holaday, Mentor,* Morehead State University Counseling and Health Services, Caudill College of Arts, Humanities, and Social Sciences**

Developing a social media campaign for a university suicide prevention program
In an average year, only 3% of Morehead State University's student population utilizes counseling services. The academic and social success, as well as, the safety of MSU students is dependent on greater access to services that promote resiliency, teach coping skills, and provide crisis support. Websites and smart phone applications allow students to access vast amounts of information and utilize a diverse array of services at all times and at any location on the MSU campus. There is no other platform that has the capability of engaging a larger number or broader assortment of students. Students need to realize that there are members of the MSU community committed and prepared to provide assistance to those in emotional distress.

Fostering feelings of greater belongingness and lower burdensomeness through the development of an international student support group curriculum
Thomas Joiner's (2005) Interpersonal Theory of Suicide suggests that the two constructs of thwarted belongingness and perceived burdensomeness are necessary and sufficient causes of suicidal desire. An intervention that would increase feelings of connection and lower feelings of burdensomeness would directly contribute to the Morehead State University Garret Lee Smith (GLS) Campus Suicide Prevention grant aims of creating a more resilient and connected campus community. The international student community is especially in need of such an intervention. This student group faces the unique stressors that accompany adapting to a new educational system and language. The theory driven approach to designing the support group curriculum produced large gains in perceptions of belongingness and significantly lowered feelings of burdensomeness. This research was supported by SAMHSA grant SM061450.

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Creating cohesive communities: Promoting the utilization of public artworks for regional development

Crager

***Kristin M. Busby, Dr. Joy Gritton, Mentor,* Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

The concept of employing the arts as an emerging force for community development in Appalachia was explored by first analyzing Northern Ireland's utilization of public art in their domestic "Peace through the Arts" programs; the resulting analysis was then applied to Appalachian communities primarily located in Eastern Kentucky. Research was conducted in collaboration with a range of domestic and foreign individuals and organizations. The project has produced a framework of effective strategies for regional artists to collaboratively create public art pieces as a means of connecting and enhancing Appalachian communities. This research was funded with an Undergraduate Research Fellowship.

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Kids and community history: Fostering Appalachian pride in the next generation

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Andrew R. Kuchenbrod, Dr. Joy Gritton, Mentor,* Department of International and Interdisciplinary Studies, Caudill College of Arts, Humanities, and Social Sciences**

It is common in small, struggling Appalachian communities, that low esteem and pride in the present day is often balanced by the fond memories of "the good ol' days." Whether in the form of storytelling, music, or simply conversation over a cup of coffee, this activity of recollection is often performed primarily by the older residents, who naturally have more to recall. Appalachian communities have, in general, a more vibrant history than their youth may be aware of; with only the present day to base their opinions on, many children miss out on these recourses. It is therefore the intent of this project to investigate the education of children in local history, and how the presentation and expression of that history to and by the youth may contribute to an increase in the emotional attachment of youth to their community, as well as pride in one's hometown and oneself. Existing literature on the importance of local history in education, as well as first-hand research at the Haldeman after-school program, comprise the basis for this investigation and its conclusions. This project is made possible through MSU Undergraduate Research Fellowship.

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Safety knowledge and attitude towards bicycling in Morehead

Chosen for presentation at the 2015 Posters-at-the-Capitol

Crager

***Randall Roof, April Haight, Mentor,* School of Public Affairs, College of Business and Public Affairs**

In 2014, Morehead became the third town in Kentucky to be designated as a Trail Town. Despite the recognition infrastructure challenges exist towards creating an atmosphere that will draw tourist to our community and encourage community members to participate in bicycling. Additionally, misconceptions about bicycle regulations and safety practices exist. This study used a survey to evaluate bicycle safety knowledge and attitude towards bicycling in Morehead, Kentucky. Survey participants include Morehead State University students, faculty, and staff, as well as community members. The survey will be used to develop a bicycle safety educational campaign. In addition, Morehead Tourism will utilize the results to develop bicycle infrastructure that promotes tourism. This project is funded by the Kentucky Department of Transportation's Paula Nye Fountain and the Appalachian Regional Commission.

2014-2015
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 2014-2015 awardees and their mentors.

COLLEGE OF BUSINESS

Student URF	Class	Department	Mentor (s)
Alison Becknell*	Jr.	SBA	Johnathan Nelson
Waylan Coffey*	Sr.	SBA	Janet Ratliff
Wade Curtsinger*	Jr.	SBA	Ali Ahmadi
Brandon Hylton	Sr.	SBA	Donna Kizzier
Brandon Walker*	Sr.	SBA	Steve Chen
Olivia Hazel*	Sr.	SBA	Ali Ahmadi
Tyler Davis*	So.	SBA	Steve Chen
Donald Burns*	Jr.	SPA	Christine Emrich
Madyson Hutchinson*	Jr.	SPA	Michael Hail
Katherine Rice*	Jr.	SPA	William Green
Clay Skaggs*	Sr.	SPA	Jonathan Pidluzny
Tyler Spencer	Sr.	SPA	Jonathan Pidluzny
Ashley Taulbee*	Jr.	SPA	Michael Hail
Sarah Woodall*	Jr.	SPA	Michael Hail
Ryan Yoder	So.	SPA	Jonathan Pidluzny
Lucas Taylor*	Jr.	SPA	Johnathan Nelson
Jeffrey Syck*	Fr.	SPA	Jonathan Pidluzny
Brooklyn Hesterberg	Jr.	SPA	Ken Henderson

COLLEGE OF EDUCATION

Student URF	Class	Department	Mentor (s)
Amanda Andrews*	Sr.	ECESE	Edna Schack
Bethany DeMoss*	Jr.	ECESE	April Miller
Laura Geiman*	Sr.	ECESE	Martha Decker
Megan McClain*	Sr.	ECESE	Edna Schack
Heather Travis	Sr.	ECESE	Mee-Ryoung Shon
Holly Wells*	Jr.	ECESE	Sarah Hawkins-Lear
Kimberly Damron	Jr.	ECESE	Mee-Ryoung Shon
Lisa Montgomery	Sr.	ECESE	Mee-Ryoung Shon
Holly Stone	Sr.	ECESE	Elizabeth McLaren
Cierra Thompson*	Jr.	ECESE	Mee-Ryoung Shon
Margaret Horton*	Sr.	ECESE	Jeanne Petsch
Maria Kallas*	So.	FGSE	John Curry

CAUDILL COLLEGE OF HUMANITIES

Student URF	Class	Department	Mentor (s)
Jasmine Prince	Jr.	Acad. Hon.	Philip Krummrich
Sarah Francis*	Sr.	Acad. Hon.	Philip Krummrich
Mary Blanton	So.	A&D	Jennifer Reis
Heather Burns*	So.	A&D	Joy Gritton
Kristin Busby	So.	A&D	Joy Gritton
Julieann Helton*	So.	A&D	Joy Gritton

Tara Madden*	Jr.	A&D	Jennifer Reis
Angela Sheehan	Sr.	A&D	Seth Green
Grant Bridges*	Sr.	A&D	Jeanne Petsch
Beverly Gabbard	NDS	A&D	Seth Green
Abigail Baggett-Oney*	Sr.	A&D	Joy Gritton
Jennifer White*	Jr.	A&D	Seth Green
Alex Bauer*	Sr.	A&D	Jeanne Petsch
Pamela Hammond*	Sr.	CMLS	Ann Andaloro
Ryan Padgett	Sr.	CMLS	Jeffrey Hill
Patrick Brumback	Jr.	CMLS	Ann Andaloro
Alexis Mathews*	So.	CMLS	Ann Andaloro
Rikki Nelson	So.	CMLS	Ann Andaloro
Paige Mathis*	Jr.	CMLS	Randy Manis
Devon Collins	Sr.	ENG	Deanna Mascle
Megan Ison*	Sr.	ENG	Deanna Mascle
Samantha Haas*	Sr.	ENG	Alison Hruby
Lauren Evans	Sr.	ENG	Deanna Mascle
Charli Lootens*	Jr.	ENG	Sylvia Henneberg
Zachary Allen	Jr.	ENG	Alison Hruby
Chelise Conn*	Sr.	HPRL	Kristina DuRocher/ Alana Scott
Alex Kubala*	Sr.	HPRL	Kelly Collinsworth
Paula Jo Roberts*	Sr.	HPRL	Kelly Collinsworth
Jaron Rucker*	Sr.	HPRL	Adrian Mandzy
Andrew Kuchenbrod	Sr.	IIS	Joy Gritton
Carly Stephens*	So.	IIS	Joy Gritton
Sarah Shepherd*	Jr.	IIS	Joy Gritton
Cailin Wile*	So.	IIS	Philip Krummrich
Montana Hobbs	Sr.	KCTM	Jesse Wells
Jonathan Calhoun*	Sr.	MThD	Stacy Baker/ Deborah Eastwood
Caroline Clay*	Sr.	MThD	Denise Watkins
Anthony Ritchie*	Sr.	MThD	Nathan Dishman
Nathan Connell*	Fr.	MThD	Brian Mason
John Tyree*	So.	MThD	Brian Mason
Kathryn Jackson*	Jr.	MThD	L. Curtis Hammond
Joshua Harney	Sr.	MThD	Greg Wing
Aaron Buede*	Sr.	MThD	Nathan Dishman
Samantha Morrill	Jr.	MThD	Stacy Baker/ Deborah Eastwood
Tracy Blevins*	Jr.	SSWC	Bernadette Barton
Demi Jacques*	Sr.	SSWC	Elizabeth Perkins/ Bernadette Barton
Hannah Mabry*	Jr.	SSWC	Bernadette Barton
Julia Back*	Sr.	SSWC	Lisa Shannon
Sharon McIntosh	Sr.	SSWC	Rebecca Katz
Garrett Appleman	So.	SSWC	Rebecca Katz
Justin Flint	Jr.	SSWC	Elizabeth Perkins

College of Science and Technology

Student URF	**Class**	**Department**	**Mentor (s)**
Cody Garcia*	So.	AET	Nilesh Joshi
Robbie Rowlett*	Fr.	AET	Hans Chapman

Steve Easterling*	So.	AET	Sanjeev Adhikari
Megan Darby*	Jr.	AGR	Duane Chappell
Shelby Treadway*	So.	AGR	Kimberly Peterson
Tessa Combs*	Jr.	AGR	
Ashley Deller*	So.	AGR	Flint Harrellson
Amanda Perkins*	Jr.	AGR	Duane Chappell
Kaitlin Chaddock*	Jr.	AGR	Duane Chappell
Paige Scheiderer*	Jr.	AGR	Patricia Harrelson
Amber Hamilton*	Sr.	AGR	Kimberly Peterson
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Marina Kirtland	Sr.	BIOL/CHEM	David Peyton
Victor Kremser*	So.	BIOL/CHEM	Christopher Cottingham
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Sarah McClanahan	Sr.	BIOL/CHEM	Michael Fultz
Taylor Patrick*	Sr.	BIOL/CHEM	Geoffrey Gearner
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Britanni Price*	Jr.	BIOL/CHEM	Kurt Gibbs
Benjamin Rasp*	Jr.	BIOL/CHEM	Allen Risk
Brooke Washburn*	Sr.	BIOL/CHEM	David Eisenhour
Mary Webb*	Jr.	BIOL/CHEM	Allen Risk
Alexandria Williams*	Sr.	BIOL/CHEM	Geoffrey Gearner
Travis Witkowski*	Sr.	BIOL/CHEM	Janelle Hare
Jessica Bryant	Jr.	BIOL/CHEM	Geoffrey Gearner
Kaitlyn Yeary	So.	BIOL/CHEM	Dayna Seelig
Emma Uchida	Sr.	BIOL/CHEM	Mark Blankenbuehler
Joshua Carty	Jr.	BIOL/CHEM	Michael Fultz
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Jennafer Grindrod*	Sr.	EASS	Robert Twiggs
Kennedy Haught	So.	EASS	Benjamin Malphrus
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Zach Taulbee*	Jr.	EASS	Jeff Kruth
Sarah Wilczewski*	So.	EASS	Benjamin Malphrus
Andrew Cavins*	Sr.	EASS	Kevin Brown
Joanna Guerrant*	So.	HWHP	Gina Gonzalez
Dylan Maldonado*	Jr.	HWHP	Dayna Seelig
Iris Johnson*	Fr.	MCSP	Robin Blankenship/ Doug Chatham/ Duane Skaggs
Bethany Alloway*	So.	MCSP	Robin Blankenship/ Doug Chatham/ Duane Skaggs
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Michael Jarman	Fr.	MCSP	Sherif Rashad
Sam Sergent	So.	MCSP	Capp Yess
Katherine Bamberger	So.	MCSP	Dora Ahmadi
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Levi Stewart	Fr.	MCSP	Ignacio Birriel
Gregory Bryan	So.	MCSP	Christopher Schroeder
Brittany Sexton*	So.	MCSP	Kent Price
Zachary Abbott*	So.	PSY	Ilsun White
Michelle Deaton	Sr.	PSY	Shari Kidwell
Ashley Hamm*	So.	PSY	Shari Kidwell
Macy Kootz*	Jr.	PSY	Laurie Couch
Chelsea Nolan	So.	PSY	Ilsun White
Andrew Preston*	Sr.	PSY	David Butz
Laura Secord*	Sr.	PSY	Laurie Couch
Sarah Keating	So.	PSY	Shari Kidwell
Madison Mantz*	Sr.	PSY	Wesley White
Zoe Becerra*	So.	PSY	Gregory Corso
Max Prowant*	Fr.	PSY	Gregory Corso
James Stark*	Jr.	PSY	Ilsun White
Amanda Clark*	Fr.	PSY	David Butz
Allison Fletcher*	So.	PSY	Ilsun White

CAMDEN-CARROLL LIBRARY

Student URF	**Class**	**Department**	**Mentor (s)**
Dakoda Trenary*	Jr.	CCL	Karla Aleman

*presenting at the 2015 Celebration of Student Scholarship

Student Index

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