

Celebration of Student Scholarship

April 23, 2014

Program Overview	Adron Doran University Center (ADUC)
8:00 – 8:55 am	All student scholars and faculty mentors are to register and pick up programs and name badges (3 rd floor ADUC), Posters should be set-up at this time and PowerPoints loaded.
9:00 – 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 Recognition.....2

Welcome Statements.....3

- Wayne Andrews, President
- Gerald DeMoss, Acting Provost and Vice President for Academic Affairs
- Michael Henson, Associate Vice President for Research and Dean of the Graduate School
- Robert Albert, Dean, College of Business and Public Affairs
- Margo DelliCarpini, Dean, College of Education
- M. Scott McBride, Dean, Caudill College of Arts, Humanities and Social Sciences
- Roger McNeil, Dean, College of Science and Technology

Oral Presentation Abstracts.....5

Poster Presentation Abstracts.....41

Recipients of Undergraduate Research Fellowships 2013-14.....78

Student Index82

TABLE OF CONTENTS

Special Thank You to the Following:

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Celebration of Student Scholarship Committee

Dora Ahmadi	Mattie Decker	Chris Miller
Murray Bessette	Robert Franzini	Janet Ratliff
Duane Chappell	Gina Gonzalez	Allen Risk
Steve Chen	Timothy Hare	Edna Schack
Laurie Couch	Michael Henson	Paul Steele
Mark Deaton	Philip Krummrich	Eujuan Tan
	M. Scott McBride	

Concurrent Session Moderators

Dora Ahmadi	M. Scott McBride
Robert Albert	Roger McNeil
Margo DelliCarpini	Chris Miller
Robert Franzini	Thomas Pannuti
Don Grant	Lynn Parsons
Philip Krummrich	Gregory Russell
Bruce Mattingly	Ahmad Zargari

Judges

Lola Aagaard-Boram	Louise Cooper	Patricia Harrelson	Janet McCoy	Mark Schack
Annie Adams	Marcia Cooper	Sarah Hawkins-Lear	Troy Meadows	John Secor
Dora Ahmadi	Greg Corso	Shante Hearst	April Miller	Dayna Seelig
Elizabeth Ash	Laurie Couch	Eva Jo Henderson	Christopher Miller	Mee-Ryoung Shon
Ray Bailey	Sandy Craft	Pamela Holbrook	William Nabb	Cassandra Smith
Justine Barber	John Curry	Jason Holcomb	Johnathan Nelson	Lola Smith
Bernadette Barton	Mattie Decker	Jami Hornbuckle	Kimberely Nettleton	Paul Steele
Regina Beach	David Eisenhour	Lloyd Jaisingh	Gary O'Dell	Tina Stevens
Leslie Beckham	Heba Elgazzar	Eric Jerde	Lynn Parsons	Sherry Stultz
Murray Bessette	Christine Emrich	Teresa Johnson	Becky Parton	Fujuan Tan
Ignacio Birriel	Christopher Field	Nilesh Joshi	Elizabeth Perkins	Karen Taylor
Jennifer Birriel	Geoffrey Gearner	Jeannie Justice	Roslyn Perry	Cathy Lynn Thomas
Mark Blankenbuehler	Cyndi Gibbs	Shari Kidwell	Kimberly Peterson	Ilsun White
Jennifer Brimson	Kurt Gibbs	Tom Kmetz	Jeanne Petsch	Brenda Wilburn
Amy Brown	Wretha Goodpaster	Philip Krummrich	Jonathan Pidluzny	Barbara Willoughby
Katy Carlson	Cary Green	Stephen Lange	Marieta Pissaro	Chavilah Witt
Hans Chapman	Connie Grimes	Jeffrey Liles	Sherif Rashad	Yuqiu You
Duane Chappell	Lynn Haller	Jennifer Little	Ann Rathbun	
Doug Chatham	Barton Thomas Lee	Krys Lynam	Janet Ratliff	
Steve Chen	Hanna	Barbara Lyons	Gilbert Remillard	
Kimberely Clevenger	Constance Hardesty	Deanna Mascle	Randy Ross	
Timothy Connor	Janelle Hare	Bruce Mattingly	Pamela Ryan	
Christina Conroy	Flint Harrelson	Lucille Mays	David Saxon	

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 ninth 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.



For many students, the "out of class" experiences provided by their faculty mentors have opened doors to new learning opportunities 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 all of the students participating in this program and to their faculty mentors for their contributions to the intellectual and creative development of our students. I want to "Congratulate" all of our student scholars for their successes and for their motivation to be engaged in student scholarship. I wish each of you every success in the future.

Dr. Gerald DeMoss, Acting Provost and Vice President for Academic Affairs



Once again 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 strong advocates for learning that involves students at each stage of their academic careers as full collaborators in research and creative production. Through engaged scholarship our students advance their interdisciplinary insights, deepen their scholarly understandings and become true partners in practice with their faculty mentors. 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 23, 2014

Concurrent Session – 301 ADUC

Moderators: Dr. M. Scott McBride & Dr. Robert Franzini

9:00 – 9:15 a.m. Understanding the various psychological states caused by contrasting music performance settings

CS - 1

***Aaron Buede, Dr. Jennifer Brimson Cooper, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

Mr. Buede's research has observed the varied psychological effects of contrasting musical performance settings on musicians, so as to understand how these psychological reactions can affect the musician's performance capabilities. His research includes a compilation of interviews of musicians with varying levels of skill and experience and with various performance backgrounds. The experience levels of those interviewed ranges from undergraduate degree seekers, to professors holding PhD's in music, while the contrasting performance backgrounds include and combine: jazz bands and combos, small chamber ensembles, major professional orchestras, solo performances, choirs, operatic productions, and wind bands. Aside from the interviews he has conducted, Mr. Buede has chosen and researched a number of sources, these include: *Also Sprach Arnold Jacobs*, *Effortless Mastery*, *The Inner Game of Music*, *Notes from the Green Room*, *Confident Music Performance: The Art of Preparation*, *A Soprano on Her Head*, *Thinking Body*, *Dancing Mind*, along with several web resources.

Through his research, Mr. Buede has found and compiled new approaches for musicians who wish to remain stoic, aesthetically aware, and musically communicative during potentially stressful performances. This research was supported by MSU Undergraduate Research Fellowship.

9:15 – 9:30 a.m. The creation of a vaudeville review in modern times

CS - 2

***Kyle Malone, Dr. Philip Krummrich and Dr. Matthew Taylor, Mentors, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

One of the most popular forms of entertainment in the early 1900s was the vaudeville review, a variety show of sorts that allowed actors, musicians, and other forms of talent to showcase themselves regularly in theatres across America. With guidance from the book "Writing for Vaudeville" by Brett Page, a vaudeville show was constructed to be performed on April 30, 2014. Notes were taken regarding the process of creating the show, including, but not limited to discussion of: planning the location/date of the performance, writing the show using original and previously written material, planning/executing rehearsals, and creating costumes/setting as authentic as possible. This presentation will discuss the history of vaudeville, the process of creating the show, and a reflection on what was learned through the production of the show. This project is in partial fulfillment of the requirements of the Academic Honors Program.

*undergraduate student presenter

+graduate student presenter

9:30 – 9:45 a.m. Madrigal dinner 2013

CS = 3

***John Siedenberg II, Denise Watkins, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

During the fall of 2013, I worked with faculty of the Music, Theatre, and Dance department to write, direct, plan, and help coordinate their annual fundraiser and department collaboration: The MSU Madrigal Dinner. Beginning in August I started research based in Renaissance festivals and ceremony while collaborating with Music Professors on incorporating their music into the history and plot of the event. Throughout the semester and until the event in December, I was responsible for scheduling costume fittings, casting the actors, creating and maintaining rehearsals and schedules, writing the script, decorating the event, attending all meetings regarding the event, and speaking with all contracted companies regarding technical support as well as our catering service, Aramark. This incredible experience was made possible through the generous support of the Undergraduate Fellowship.

9:45 – 10:00 a.m. Freedom, happiness, and the general will: Rousseau’s philosophy on individual happiness

CS = 4

***Benjamin D. Caldwell, Dr. Glen Colburn, Mentor, Department of English, Caudill College of Arts, Humanities, and Social Sciences**

Although the philosophy of Jean-Jacques Rousseau is among the most well-read in the Western world, little has been made of the sometimes contradictory ways that he linked freedom and happiness with civil responsibility; despite advocating for personal and intellectual freedom in all men, Rousseau also advocates the benefits of what he called the General Will, a consensus by the populace for the good of all men that is often described in terms that seem totalitarian. Drawing from Rousseau’s major writings – *The Social Contract*, *Emile*, and *The Discourses* – this research aims to present a unification of his philosophies on personal freedom, happiness, and civic responsibility. When this body of work is viewed, we see that Rousseau only valued the General Will insofar as it allowed individuals to achieve their own goals, and that the General Will should in fact increase their ability to find happiness. This research was funded with an Undergraduate Research Fellowship.

10:00 – 10:15 a.m. Literary citizenship in the face of the apocalypse: why write now?

CS = 5

***Ben Whisman, Dr. Tom Williams, Mentor, Department of English, Caudill College of Arts, Humanities, and Social Sciences**

How do writers continue on in an age when anyone can get published and so few care to read? The focus of this research revolved around oversaturation of written work and an overstimulation of the American readership. Our work began with editorial duties at *American Book Review*. This involved choosing books to be reviewed, assigning reviewers, and editing reviews. Our study was furthered with an interview of Davis Schneiderman, titled *I’ve Never Been Me*, which appeared in the spring 2014 issue of *Rain Taxi Review of Books*. Our research culminated with a panel discussion at the 2014 Kentucky Philological Association conference. The panel was titled *Fiction in the Face of the Apocalypse: Why Write Now*, with questions focused on the problems plaguing the publishing industry as well as writers in the digital age.

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. *Hurry up and wait: The video production process*

CS = 6

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

The video production process demands the ability to wear multiple hats. Actual filming makes up a small amount of the time spent on any given project. Ms. Hammond and Mr. Padgett were involved in creating five 90-minute programs, *The Video Vault-The Kentucky Edition*, four 30-minute programs, *The Morehead International Independent Film Festival*, along with other film-related activities. To give the students full exposure to production processes, they were assigned tasks of varying degrees of difficulty and need, including film research, film promotion, DVD manufacturing, etc. The end result was a thorough understanding of the entire process of video production. These two individuals were supported by MSU Undergraduate Fellowships.

10:45 – 11:00 a.m. *Leadership lessons learned at summer camp*

CS = 7

****Allison Johnston, Dr. Noel Earl, Mentor, Department of Communication, Media, and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences***

The purpose of this qualitative study was to investigate the leadership characteristics and lessons that are learned in a summer camp environment. This was inspired by the award winning novel *The Cabin Path* by Jay Gilbert and compared to the popular *Reframing Leadership* by Bolman and Deal using a typological approach. The hypothesis was that those leadership lessons identified by Jay Gilbert were in fact, essential to becoming a leader. The goal was to establish the lessons outlined in the novel as compared to the theory and identify their value beyond summer camp into a career field and adulthood.

11:00 – 11:15 a.m. *Living in Between, a documentary*

CS = 8

****Sarah Kadish, John Flavell, and Tim L. Creekmore, Mentors, Department of Communication, Media and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences***

The history, landscape, and in some cases, culture of southeastern Kentucky has been shaped by the extraction industry: first timber, then coal. Regardless of right or wrong, pro or con, the presence of this industry forces Appalachians to make difficult decisions. Some of those decisions have forced Appalachians to recognize a shift in their relationship with the land. This short documentary was produced as means of exploring and sharing relationships between land, cultural values, and the mono-economy created by the coal industry in southeastern Kentucky. Multi-generational Appalachians discuss these different aspects and share their perspectives, as well as their personal tribulations and hopes for the future. This documentary was supported by the MSU Undergraduate Research Fellowship.

11:15 – 11:30 a.m. The calling: Appalachian women and religion

CS = 9

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

The purpose of my study was to collect stories of how women were called to leadership roles in their religion. The goal is a short video documentary on Women and Religion for Kentucky Educational Television. To begin our study we interviewed a small group young woman in Eastern Kentucky about their religion or spirituality. Then, we collected some stories from women who live in the Appalachian region of the United States and serve in leadership roles in their churches. This work documents the journeys these women have taken in response to being called into a religious life. It highlights the rewards and challenges that women face in their religions. These participants envision the future for women in their churches. Finally, we conducted some interviews with scholars who study women and religion. I will present 10 minutes of the documentary. I am an Undergraduate Research Fellow.

11:30 – 11:45 p.m. Understanding the process of identifying community needs through the Haldeman after-school program

CS = 10

***Andrew R. Kuchenbrod, Dr. Joy L. Gritton, Mentor, Department of Art and Design, Interdisciplinary Appalachian Studies Program, Caudill College of Arts, Humanities, and Social Sciences**

Over the course of three semesters the Haldeman Community Center After School Program has worked to define its objectives and organize its operations. Project staff consult and collaborate with community leaders, teachers working in the public school system, parents, the children themselves, and volunteers to identify the social needs of the community and to set goals. The primary concern has been to provide a safe, positive support structure for the youth of Haldeman as they deal with everything that goes on in their lives, but the program also offers new experiences for participating students, as well as outlets for their creative expression and learning. Staff must also continually evaluate whether or not the program objectives are appropriate and are having the desired effect. Analysis of the project thus far has led the staff to develop a model they think can effectively be exported to other communities with a variety of applications. Kuchenbrod's participation in this ongoing project has been supported by the Haldeman Community Center and a Center for Regional Engagement Fellowship.

11:45 – 12:00 p.m. Break

12:00 – 12:15 p.m. Rowan County alternative middle school visual art enrichment program

CS = 11

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

The goals of this project included developing curriculum for a 12-week art program for middle school students at the Bluegrass Discovery Academy (Rowan County Alternative School), serving as a lead student-teacher, and creating a photographic/narrative documentary of the program during the Spring 2014 semester. Curriculum emphasized 1) the development of students' awareness of the world and of self, 2) exposure to a variety of art materials and processes, 3) the creation of inventive and unique art objects. A reflection journal was kept to document students' experiences, students' development, and observations made by the researcher. Photographs of students creating artwork and their final projects provided further documentation of students' expressions of their experiences. Art classes were held on Thursday afternoons during the Spring 2014 semester. The program also included a culminating art exhibition. This research was supported by a MSU Center for Regional Engagement Undergraduate Fellowship.

12:15 – 12:30 p.m. Art enrichment through mural creation

CS - 12

****Heather A. Burns, Dr. Jeanne Petsch, Mentor, Department of Art and Design, Caudill College of Arts, Humanities and Social Sciences***

Research was conducted with “at risk” high school students from The Rowan County Alternative School (Bluegrass Discovery Academy) and K-5 students who attend the Haldeman Community Center After School Program, to study the effects of art enrichment through mural painting. The murals were created by the students and then displayed in their school and program center. Throughout the creation of the murals, the students’ aesthetic awareness, identity development, and ability to work collaboratively to create group projects was studied. The findings include greater ability to engage in collaborative work, increase in student interest in art, and a higher level of idea development. This research was supported by the George M. Luckey Jr. Academic Honors Program.

12:30 – 12:45 p.m. Designing on a dime: Creating promotional materials 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. Research demonstrates that businesses associated with a logo are generally more successful. Having an appealing and memorable public image can also mean the success or failure of a non-profit organization. The goal of this project is to help the Haldeman Community Center After School Program in Rowan County, Kentucky become financially viable, given limited resources, while keeping their services free to any child. Various options for drawing volunteers and donations of supplies and money are being investigated, and a series of creative promotional materials are being designed—a logo, business cards, flyers—to grab the attention, and hopefully the support, of the community. In addition, fundraising materials are being developed to be both aesthetically appealing and stimulate recognition for the program: a wall calendar and greeting cards that feature artwork by the children. Creating a recognizable design aesthetic will help propel the Haldeman Community Center After School Program to new heights by getting their name, message, and mission out into the community. This project was supported by an MSU Undergraduate Research Fellowship and the Haldeman after School Program.

12:45 – 1:00 p.m. On the path from planning to programming: Art events and exhibitions

CS - 14

****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 2013-14 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 large scale international drawing 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. 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.

1:00 – 1:15 p.m.

The art of exhibitions and collections management

CS - 15

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

The Undergraduate Fellowship in Exhibitions and Collections Management focuses on the logistical planning and administration of arts programming and services. Working within the arts programming hosted by the Claypool-Young Art Gallery, UR Fellow Mary Blanton was involved with the coordination and management of art events during the 2013-14 academic year, including the organization of art submissions for the 2014 Bluegrass Biennial jurying process, and assisting in art handling, receiving, and installation with six exhibitions, especially a large international drawing exhibition. With exhibitions in particular, Mary was involved with generating all exhibition text, including labels. Her work also included event management: logistics, hosting, promoting and documenting, especially with the annual Craft Bizarre and the annual Costume Contest and Rocky Horror Picture Show. This fellowship is designed to prepare a student to begin a career in arts administration or to pursue a degree in arts administration or museum studies, 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.

Concurrent Session – 302 ADUC

Moderators: Dr. Don Grant & Dr. Philip Krummrich

9:00 – 9:15 a.m. Psychological services for police officers: Availability and use

CS - 16

***Alex Davis, Dr. Elizabeth B. Perkins, Mentor, Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

An exploratory survey was conducted assessing the availability of psychological services for police officers, their families, and civilian workers. The top 50 largest city and county departments, as well as the 49 state police agencies (Hawaii does not have one) were surveyed, with a 46% response rate. Most agencies provide services to their employees via externally contracted mental health providers (79%), while less than half of respondents provide at least some psychological services to their employees in-house (42%). Services most often utilized as well as the reasons for and against utilizing services were included in the survey. This project is supported by MSU Undergraduate Research Fellowship and a Research and Creative Productions Summer Fellowship.

9:15 – 9:30 a.m. Playing the field: How participating in sports facilitates or constrains coming out for lesbian athletes

CS - 17

***Elizabeth Harlow, Dr. Philip Krummrich, Mentor, Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

In America today, the gay rights and liberation movement is moving forward at a rapid pace. While various topics involving the gay community have been explored, little attention has been given in regard to homosexuality and sports. The rise in the representation of the gay community in sports has led me to question what role the participation in sports plays in the lives of lesbian women. More specifically, how does participating in sports facilitate or constrain coming out for lesbian athletes? Utilizing a qualitative approach to this research, I propose a study consisting of a series of individual and group interviews of ten to fifteen lesbian women in Kentucky who are openly gay and were athletes in the past. The individual experiences and opinions of these women will provide greater insight into the role that playing sports may play in the coming out process for lesbian athletes and whether or not this role may have changed over time, as well as address the gender gap in current literature. This research is presented in partial fulfillment of the requirements of the Academic Honors Program.

9:30 – 9:45 a.m. Exotic dancing in 2014: Raunch culture, the economy, and technology

CS - 18

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

The economic recession starting in 2008 negatively affected many American industries, including strip bars. Additionally, the increasing availability of free internet porn, hook-up culture, and the widespread use of cell phones in daily life have changed the way women experience working as exotic dancers. Significantly, in 2014, sexually provocative images in our media landscape continue to multiply. At the same time, a new generation of customers are frequenting strip bars, cell phones in hand, and these individuals are at least as comfortable online as face-to face. The sexualization of mainstream culture, coupled with rapid technological changes and the economic recession, shapes the current working condition for exotic dancers in strip bars. Through audio-taped interviews with 20 dancers and other club employees, this presentation explores participants' ideas about emerging working conditions for dancers. Preliminary data suggests deteriorating conditions for dancers in which customers routinely expect sexual services in excess of public and private dances. This research was supported by an MSU Undergraduate Research Fellowship.

9:45 – 10:00 a.m. It's gender time: Exploring the gender roles presented in children's cartoons

CS - 19

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

According to the American Academy of Child and Adolescent Psychiatry, on average, a child will spend three to four hours a day watching television. Often children are unable to tell the difference between the fantasy worlds presented on television versus reality. Children, aged two to eleven, may be especially susceptible to gender stereotypes/roles/identities portrayed in their favorite cartoons and likely to internalize the values presented.

Compounding this issue, parents may assume that children's programming is safe and appropriate. This presentation explores messages about gender in children's cartoons using content analysis of the top three watched cartoons. Data will be shared on 1) male to female character frequency 2) the appearance of the female characters, and 3) the role females play in the story after analyzing the content of a total 42 episodes of three of the most top-watched shows.

10:00 – 10:15 a.m. Examining the intergenerational performance of masculinity and criminal behavior

CS - 20

***Hannah Willis, Dr. Rebecca S. Katz, Mentor, Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

In qualitative interviews conducted with over twenty incarcerated men, findings revealed repeated patterns of criminal behavior occurring cross-generationally among both fathers and sons. By examining the life histories of these men emerging patterns of abuse, neglect, and poor fathering elucidated support for social learning theory and attachment theory. Though many of the participants attempted to distinguish themselves from their fathers' behavior, significant similarities were revealed in relation to their criminal behavior and the criminal behavior of their fathers as well as with regard to parenting behaviors. Other important factors, such as race, forms of dominating masculinity, and urban versus rural background were also taken into consideration in order to more fully understand the men's life histories and lived experiences. This research was supported by MSU Undergraduate Research Fellowship.

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. Owingsville on fire: The second great awakening and the birth of small-town evangelism

CS - 21

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

Owingsville, like many other small communities, was revolutionized by the Second Great Awakening. This project examines how Owingsville and similar communities were affected by this movement. First, Owingsville was transformed by the new denominations and pastors that were introduced to the area through the renowned Cane Ridge Revival. Second, commoners that previously could not be a part of traditional churches now sought out groups that shared their beliefs. Lastly, though some might suggest that the Second Great Awakening came about as a result of the American Revolution, the movement developed independently of this event, largely due to the political and economic conditions of small communities like Owingsville. The research examines secondary source studies such as Paul Keith Conkin's *Cane Ridge: America's Pentacost* yet hinges on primary source research such as church records from Owingsville and surrounding areas. This work has been supported by an Undergraduate (UG) Fellowship.

10:45 – 11:00 a.m. The historical foundations of contemporary worker cooperative networks in the United States

CS - 22

***Jessica Farrell, Dr. John Hennen, Mentor, Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

The idea of a moral economy may seem outrageous and impractical to some, but has continuously proven in recent history to be both ideal and practical. This research project includes primary and secondary historical research, in addition to oral history interviews, focusing on historical influences on the contemporary philosophies of "moral economies," as articulated by local food networks and worker cooperatives nationally and regionally. This project incorporates research into such projects as the local movements in Whitesburg, KY and Youngstown, OH, and the intellectual underpinnings of Gar Alperovitz, Wendell Berry, Rachel Carson, and Wes Jackson. This research can be applied to future studies of the successes and failures of local foods and worker cooperative movements, and will lead to further investigations into its implementation in the Appalachian and Rowan County, KY region. This research was funded through an Undergraduate Research Fellowship.

11:00 – 11:15 a.m. Interactivity: Unique aesthetics of video games

CS - 23

***Asa Hosoda, Dr. Christina Conroy, Mentor, Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

Video games have become a popular form of entertainment, and, along with that, a very popular topic in philosophy of aesthetics. Most agree video games are art, but the reason for video games to be classified as art has yet to be identified in a satisfactory manner. It has been suggested that the aesthetics of video games derive from their interactivity. However, claiming all video games to be interactive does not uniquely distinguish them from other forms of art. We must identify what it means for video games to be interactive and how it makes them independent as an art form. It is interactivity that makes video games an art form and aesthetically unique from other art forms. Dominic Lopes, a philosophy professor at the University of British Columbia, introduces the definition I will use for interactivity. By adding unpredictability to Lopes' definition of "interactive", I will argue that player(s) vs. player(s) games [PvP games], allow video games, through interactivity, to have a unique aesthetic aspect.

11:15 – 11:30 a.m. Decoding "La dame à la licorne": New approaches to a medieval tapestry series

CS - 24

***Carter Kozar, Dr. Karen Taylor, Mentor, Department of International and Interdisciplinary Studies, Caudill College of Arts, Humanities, and Social Sciences**

Decoding the meanings of medieval artworks can be extremely difficult, given the often incomplete preservation of such works and the lack of information about their provenance and authorship. In the example of "La Dame à la Licorne," a set of six tapestries displayed in the Musée de Cluny in Paris, a modern interpretation has been widely accepted that the six panels represent the five senses, with the sixth one representing "Mon seul desir" (my only desire). Yes this interpretation ignores much evidence to the contrary: for example, there may have been as many as eight panels, and the main character in each panel is not performing the acts associated with the sense it supposedly represents. This presentation will explore other ways of interpreting this fascinating work of medieval art. This research was sponsored by an MSU Undergraduate Research Fellowship and the Academic Honors Program.

11:45 – 12:00 p.m. Break

12:00 – 12:15 p.m. High school curriculum designed to avoid remedial math in college

CS - 25

****Kyle Bradley, Dr. Doug Chatham, Course Instructor, Randy Ross and Richard Blanton, Mentors, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Most universities have remedial courses available to students who do not meet requirements to enroll in standard courses. The necessity of these courses can be diminished with the proper preparation and guidance throughout a student's high school career. This project was done to enable high school students to steer clear of remedial math courses. Viewing the ACT scores, GPA, and courses taken, we can try to identify key factors that play into a student's college readiness. Using statistical analytics, it was found that the courses taken by students was a significant factor in determining the need for remedial math in 2009 Rowan County Senior High School graduates. These results were found using analysis of variance tests. Statistically, any of top five out of eight curriculum that was created for the study would be the same and give students a high probability of scoring high enough on the ACT to not be required to take remedial math here at Morehead State.

12:15 – 12:30 p.m. Calculator dependence

CS - 26

****Virginia Bishop, Dr. Christopher Schroeder, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

This study focuses on how calculator use is affecting college readiness of current students. For this study I gathered data from twelve classes: three classes each from Math courses 090, 091, 093, and 152 on the Morehead State University campus. Participating students took a survey and then a basic skills assessment *without* calculators during my first visit. Approximately one week later I returned to the class and the students retook the same basic skills assessment *with* calculators. Things I looked for were accuracy as well as duration of testing time.

While the data are still being evaluated, the scores reflect what you would expect. The scores on the non-calculator portion are quite lower with testing duration being much longer. The scores on the calculator portion are much higher with testing duration being nearly a quarter of the duration of the non-calculator assessment. However, the commonalities of the mistakes, as well as the astonishing low scores, were not as expected. We will look at the data gathered and the implications for calculator use in mathematics education.

12:30 – 12:45 p.m. A comparison of statistical analyses of globe at night and great worldwide star count astronomical data

CS - 27

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

Light pollution, the obstruction of the nighttime sky due to wasteful lighting practices, is a serious problem facing many developing and developed countries. This research analyzes data submitted through two grassroots light pollution collection databases: the "Globe at Night (GaN)" and "Great World Wide Star Count (GWWSC)". Citizen scientists from around the world submit naked-eye limiting magnitudes to both of these data bases. We will describe each program briefly and perform a simple statistical analysis of the GWWSC data. We also examine global trends in time over the 2006-2012 data sets from GWWSC and compare those trends to a previous analysis of the GaN data. We find similar trends across the data sets and posit explanations for observed differences.

12:45 – 1:00 p.m. **A model to reduce light pollution on MSU’s campus**

CS = 28

****Bryan Allen Conn, Dr. Jennifer Birriel and Dr. Ignacio Birriel, Mentors, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

In an effort to study light pollution and possibly reduce the negative impacts of light pollution on MSU’s campus we created a model of a public area (Bell Tower outside of the Camden-Carroll Library). We modeled Bell Tower because it is a high traffic area which includes three different types of light fixtures. These fixtures are rated as good or bad (as per the standards set by the International Dark Sky Association) with respect to light pollution with two of the three types of fixtures present being classified as bad. We use a Vernier Light Sensor and a digital camera to record light levels as we experiment with different lighting conditions. We examine the effect of reducing the bulb wattage, eliminating certain lamps, and adding shielding to existing fixtures. We found that shielding will allow us to reduce the input voltage by 25% and still allow us to maintain the same level of illumination. We conclude by calculating the energy savings and reduction in carbon footprint by making these changes.

1:00 – 1:15 p.m. **What factors influence the use of dietary supplements among college students in Eastern Kentucky?**

CS = 29

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

Dietary supplements are pills, capsules, tablets, or liquid products that contain a vitamin, mineral, herb, botanical, amino acid, or other concentrate, metabolite, constituent, or extracts. Although these products are usually marketed using health claims that do not have to be approved or safety-tested by the US FDA, Americans annually spend 20 billion dollars in these therapies. The literature on the use of dietary supplements has identified gaps in the knowledge associated with the factors that influence their use, especially among young adults in rural Appalachia. The purposes of this study are: (a) to collect information regarding demographics, type and quantity of supplements used, and how often they are used, and (b) to use inferential statistics to identify what factors are statistically related to an increased use of these alleged therapies. This information can be used to plan and design targeted awareness campaigns that will educate college students about the lack of scientific evidence supporting the effectiveness of dietary supplements.

Concurrent Session - 312 ADUC

Moderators: Dr. Roger McNeil & Dr. Dora Ahmadi

9:00 – 9:15 a.m. Belongingness needs and fear of negative evaluation motivate online communication

CS = 30

****Justin Sargent, Dr. David Butz, Mentor, Department of Psychology, College of Science and Technology***

In their influential work, Baumeister and Leary (1995) proposed that humans have a fundamental need to belong. In the present work, we examined the role of belongingness needs in online communication and factors that determine why some individuals seek to fulfill belongingness needs via online communication. We proposed that individuals with strong belongingness needs sometimes fear negative evaluation in social situations. Among these individuals, face-to-face interactions may be a relatively threatening experience, however online communication may be an alternative and preferred means to belongingness fulfillment. To examine these ideas, one hundred forty participants reported their need to belong, propensity to seek interactions on the Internet, fear of negative evaluation, and general affiliation motivation. Individuals with a stronger need to belong reported an increased desire to affiliate with others, increased fear of negative evaluation, and increased online communication relative to low need to belong counterparts. Fear of negative evaluation was related to participants' propensity to seek online interactions and mediated the relationship between need to belong and online interaction seeking. Findings will be discussed in terms of their implications for understanding the psychological motivations underlying online communication. This research was supported by a MSU Undergraduate Research Fellowship from the Honors program.

9:15 – 9:30 a.m. Explorations in attachment: Dr. Kidwell's family development study and its implications

CS = 31

****Ashley Nicole Morris, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science and Technology***

Attachment is a complex approach to understanding the underlying mechanisms of human behavior, with roots in evolutionary, psychodynamic, cognitive and behavioral theories. The most crucial attachment bond occurs between a parent and child during infancy. At this early and formative stage in a child's life, the implications of insecure attachment can be devastating. Attachment can be measured throughout the lifetime, and is considered relatively stable as an individual develops. This talk will describe a sample of families from our region who participated in Dr. Shari Kidwell's Family Development Lab. Over 50 families initially participated, and 21 have been assessed nearly 10 years later. We are investigating the presence of depression and trauma, as well as comparing the prevalence of these factors in different attachment styles (i.e. secure vs. insecure: anxious and avoidant). Lastly, we are examining metalizing constructs such as reflective functioning, mind-mindedness, and sensitivity. We expect that secure parents will show greater understanding of their child's thoughts and emotions, which in turn should be associated with more secure child attachment and better adjustment. This research was supported by MSU's Undergraduate Fellowship and Graduate Assistantship Programs, as well as MSU RCPC and KY NSF grants.

9:30 – 9:45 a.m. The research domain criteria: A new framework for awarding psychology research funding

CS = 32

***Kendra Combs, Dr. Karen Taylor, Mentor, Department of Psychology, College of Science and Technology**

Current diagnoses for mental disorders are based on clinical observations and patient reports of symptoms. Funding for new research is based on meeting the standards of current diagnostic assessments via the DSM-V. The NIMH is in the process of developing a new system of classifying mental disorders based on behavior and neurological measures for the purposes of research called the Research Domain Criteria (RDoC). This project looked at potential research projects that would benefit from the implementation of the RDoC as well as the implications of the RDoC for the future of psychology.

9:45 – 10:00 a.m. ACT and life above zero

CS = 33

***Nolan R. Williams, Dr. J.T. Blackledge, Mentor, Department of Psychology, College of Science and Technology**

Multiple studies have shown that processes similar to psychological flexibility have lead to increase in life satisfaction and personal growth as well as finding meaning in life. For example one study demonstrates that values based exposure and acceptance is related to increased life satisfaction in individuals who experience chronic pain (Wicksell, 2008) and another study found that as PTSD clients decrease their experiential avoidance, personal growth and finding meaning in life increased (Kashdan & Kane, 2010). Other studies have found that mindfulness training, a key tool in developing psychological flexibility, associated with openness to experience (Niemiec, 2010). Drawing on these past studies, the present study seeks to explore the possible relationship between psychological flexibility and positive life qualities such as happiness, life satisfaction, curiosity and exploration, and gratitude. To explore these hypothesized relationships, undergraduate intro psychology students completed a measure of psychological flexibility, as well as measures of positive life qualities mentioned above. Preliminary results from correlational analysis suggest that psychological flexibility as measured by the AAQ (Hayes et al, 2006) may be associated with happiness, as measured by The Subjective Happiness Scale (Lyubomirsky, 1997). These findings suggest that increasing psychological flexibility may actually contribute to an increase in happiness.

10:00 – 10:15 a.m. Empirical assessment of a critical thinking process

CS = 34

***Natalie G. Justice, Makinzee K. Tatman, Justin Barber, Dr. Wesley White, Mentor, Department of Psychology, College of Science and Technology**

According to a popular model, effective critical thinking involves explicitly analyzing an argument into its parts, evaluating the relations between the parts (between, for example, information and inference), and considering the adequacy of the analysis and evaluation (engaging in metacognition). Our research assessed major suppositions of this model. Participants were undergraduates who completed lessons in a campus computer lab. Study 1 assessed the supposition that explicitly considering the adequacy of one's analysis (analysis metacognition) improves analysis. Students in control and experimental groups read a series of arguments. After each argument they completed an analysis and then were shown the correct analysis. Individuals in the experimental group also scored their analyses for accuracy. Study 2 assessed the supposition that explicitly analyzing an argument facilitates identifying unstated assumptions and doing supplementary evaluation. Students in control and experimental groups read a series of arguments. After each argument, individuals in the experimental group were shown the correct analysis. Both groups then identified unstated assumptions and evaluated aspects of the argument. Scores for analysis or for assumptions and evaluation were determined for each argument. Metacognition facilitated analysis. Explicit analysis facilitated assumption identification and argument evaluation. Supported by an MSU URF.

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. Physiological stress on acquisition of simple learning

CS = 35

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

Stress influences a wide range of behaviors. Exposure to an extremely stressful situation leads to maladaptive behavior by affecting the hypothalamus-pituitary-adrenal (HPA) axis. The present study examined the effects of physiological stress on acquisition of simple learning. Male Wistar rats were shaped to lever-press for food pellets. One group of rats was placed in a restraint (physiological stress) for 30 minutes. Another group was gently held (controls). Rats were then trained on a fixed ratio 5 (FR5), which required five lever-presses for each pellet, for 4 sessions (one session/day). Acquisition of FR5 was compared for the two groups. First lever-press latency, runtime, and food-retrieval were measured. Compared to controls, the response latency of stress group increased across 4 days, whereas average runtime was significantly greater on Day 1, followed by a gradual decrease with repeated exposure to stress. Neither food-retrieval nor consumption was affected by stress. Our data suggest that appetitive behaviors are differentially affected by physiological stress, and that some aspects are more susceptible to stress. Currently we are comparing the effects of cortisol, a stress hormone, on FR5 acquisition. Adam Roe and Josh Holbrook are recipients of Neuroscience Research Assistantships. Supported by NIH grant: R15DA015351.

10:45 – 11:00 a.m. The correlation between the Wingate Anaerobic Test and sprinting

CS = 36

****Matthew Marcum, Dr. Manuel Probst, Mentor, Department of Health,***
Wellness, and Human Performance, College of Science and Technology

Adenosine Tri-Phosphate (ATP) and Phosphocreatine (PCr) are molecules that transport the chemical energy necessary to drive reactions of anaerobic metabolism in the human body. Countless sports rely on anaerobic metabolism in order to perform activities of high-intensity (sprinting, jumping, etc.). The Wingate Anaerobic Test (WAT) is most common test employed by exercise scientists to measure anaerobic power output and anaerobic capacity. It is theorized that data derived from the WAT will determine high-intensity exercise effectiveness. A sample of Morehead State University students volunteered to participate in the WAT, followed by a sprinting test. Data was collected from both tests, and subsequent statistical analysis followed. This research was supported by a MSU Undergraduate Research Fellowship.

11:00 – 11:15 a.m. Pet obesity on the rise in the United States

CS = 37

****Ashley Ruth, Dr. Karen Taylor, Mentor, Department of Agricultural***
Sciences, College of Science and Technology

Obesity is defined as increased body weight by excessive accumulation in fat. A body condition scoring (BCS) system was used to determine the weight category pets fall in, which ranges from 1-5, with 3 being a normal weight range, 4-5 being considered overweight, and a score of 5 being obese. Current research shows that companion animal obesity is on the rise much like obesity in the human population, with 58.3 % of cats being overweight or obese and 52.5% of dogs being overweight or obese. Over half the pet population in the United States is currently classified as overweight or obese. The results of this research confirm a rising problem of obesity in pets alongside the rising problem of obesity in humans.

11:15 – 11:30 a.m. Application of a clinical reflection self-assessment into a summative senior nursing student learning outcomes portfolio

CS = 38

***Shelby Branam, Michelle McClave, MSN, RN, Mentor, Department of Nursing, College of Science and Technology**

Faculty in the Baccalaureate Nursing Program at Morehead State University have considered the implementation of a student portfolio requirement in order to demonstrate completion of program outcomes. Clinical reflection has been identified as an especially helpful mechanism to promote the development of critical thinking in nursing students, and is thought to be useful in meeting nursing student learning outcomes. This presentation will describe the research, both through literature review and personal experience, which has been performed in order to substantiate the recommendation to include clinical reflection as a portion of the tentative student portfolio.

11:45– 12:00 p.m. Break

12:00 – 12:15 p.m. Quantum computing implementation of Shor’s algorithm

CS = 39

***Jorge Chang, Heba Elgazzar, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

This project aims to walk through the process of understanding how to implement a simulation of Shor’s quantum factorization in a classical computer. The process presents many shortcoming and challenges that reflect the potential and power that the field has in the future. We give a brief introduction of the basic concepts under quantum computing and provide information about the current state of the field. We start by explaining the structure of quantum computers and quantum gates and then provide a theoretical solution to Deutch’s one qbit problem. We then give an explanation and implementation of Shor’s factoring algorithm which factorizes numbers in polynomial time complexity. Shor’s algorithm is of big importance to computer scientist since modern RSA encryption methods rely on the exponential complexity of the factorization problem in classical computers. No previous knowledge of the field is assumed and we aim to give an interdisciplinary explanation with a focus in mathematics and computer science.

12:15 – 12:30 p.m. Design and implementation of Apriori and K-means parallel data mining algorithms

CS = 40

***Erich Hohenstein, Dr. Sherif Rashad, Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

Data mining extracts implicit, previously unknown, and potentially useful information from large datasets. Although it is a very powerful tool, it can be a very time consuming task. With the evolution technology of new devices with multiple processors, we need to reconsider our programming approach to make use of these new technologies. The goal of this research project is to design and implement parallel algorithms that can be used for a wide range of data mining applications to mine large databases. Previously in this research, we work on the parallelization and implementation of the Apriori association algorithm, through the process of dividing the mining task over a defined number of parallel threads. Now we focus on parallelizing the K-means clustering algorithm in order to improve its performance. As mentioned, our approach to improve these algorithms is through modifying the sequential algorithms so they can be executed over computer clusters or parallel processors. In this research we use OpenMP to support shared-memory parallel programming in C++. We utilize the set of compiler directives, library routines, and environment variables that are provided by OpenMP.

12:30 – 12:45 p.m. Optimizing next-generation mobile networks using frequent sequential pattern mining

CS - 41

****Zachary W. Lamb, Dr. Sherif S. Rashad, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

With the increasing number of mobile users and the high volume of traffic that exists in modern mobile networks, it is evident that new methods for uncovering the patterns that exist within the usage data need to be developed. We present an algorithm called Prefix-based Mobility Mining, which combines frequent sequential pattern mining and association rules to build a system that can be used to improve traffic handling and predict the future actions of users in a network. By representing the interactions of mobile users with networks as frequent sequences, we can effectively develop an understanding of traffic patterns that exist within a mobile network. To test our technique we experimented with a real-world dataset that represents the mobile usage information of multiple users. We evaluate our technique by mining patterns and rules associated with an individual user and then determine if these rules can accurately classify anonymous data as an existing or new user. Knowledge of the trends of mobile networks can easily be applied to load balancing or to improving location-based services. This research was supported by a MSU Undergraduate Research Fellowship.

12:45 – 1:00 p.m. Solving timetabling using genetic algorithms

CS - 42

****John Harget, Dr. R. Duane Skaggs, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Timetabling is the process of creating a class schedule for a school or university. Although creating a schedule may sound simple, it is extremely difficult to accommodate aspects such as prerequisites, limited classroom options, professor preferences, student interest, and other competing factors. Furthermore, it is nontrivial to determine whether another schedule might better satisfy the various criteria.

We present a solution to the problem of timetabling based on the use of genetic algorithms. Our genetic algorithm begins with randomly generated schedules and then uses crossover and mutation to combine the schedules and develop a near-optimal solution. This method involves the general aspects of timetabling as well as some issues which are specific to the Department of Mathematics, Computer Science, and Physics at Morehead State University.

1:00 – 1:15 p.m. A preferential attachment model and an inverse preferential attachment model for geometric graphs

CS - 43

****William M. Holbrook II, Dr. R. Duane Skaggs, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Graph theory models are often used to model complex real-world networks. A classic model is the Erdős-Rényi model. Another model is the Barabási-Albert model which introduces the concept of preferential attachment. Under preferential attachment, new vertices added to the graph are more likely to connect to existing high degree vertices in the graph. For our research, we consider two new models. Under each, new vertices added to the graph may only attach to geometrically nearby vertices, but each model uses a different attachment scheme. In both, new vertices added to the graph are more likely to connect to existing low degree vertices; however, each attachment scheme implements this concept differently. We analyze the experimental results of our models in relation to the Erdős-Rényi and the Barabási-Albert models, and describe implications of the models with respect to different real-world applications.

Concurrent Session – Riggle Room

Moderators: Dr. Bruce Mattingly & Dr. Thomas Pannuti

9:00 - 9:15 a.m.

Epigenetics and cancer: A senior honors project

CS - 44

****Casey Fitzpatrick, Dr. Matthew Ellison, Mentor, Department of Biology and Chemistry, College of Science and Technology***

Cancer has long been and will continue to be a topic of great interest in the scientific and medical communities. It's a disease that affects many, and is so varied in its constructs and mechanisms that it is a captivating topic for countless researchers around the globe. Genetics and the crucial role it plays is one aspect of cancer that continues to drive research. Its critical function in programming the many proteins and enzymes that control cell proliferation and apoptosis make it a pertinent research topic as we continue to shed light on our understanding of cancer and the ways that we can attempt to treat it. The past decade has seen many advances in our understanding of cancer and the role of genetics, in addition to the recent developments in our understanding of the role of epigenetics. Epigenetics is broadly described as the study of changes in gene expression or phenotype caused by something other than a change in DNA sequence. Using multiple studies, including work done by Baylin, Esteller, and Sigalotti, I will attempt to clarify epigenetics, its implications, and its impact on healthcare in a manner easily understood by those without a background in the biological sciences.

9:15 - 9:30 a.m.

The potential use of antibiotic resistant genes as microbial source tracking markers in watersheds

CS - 45

****Kasey Reed, Natasha Whitt, Dr. Geoffrey W. Gearner, Mentor, Department of Biology and Chemistry, College of Science and Technology***

Fecal contamination in surface waters is a serious problem in the Triplett Creek Watershed, Rowan County, Kentucky. In this project, we wanted to know if bacterial DNA could be extracted directly from water and soil samples without first culturing the bacteria, and then be used as a target to amplify specific antibiotic resistance genes (ARG) by polymerase chain reaction (PCR). PCR primers specific for the ARGs *ereA*, *sul-I*, *sul-II*, and *tetO* were utilized to screen DNA samples, and the resulting PCR products were assessed by agarose gel electrophoresis. ARGs were detected in a number of samples, indicating that the method has potential for use in microbial source tracking efforts. Such efforts can allow us to determine the point and host source of fecal pollution in the watershed. Information provided by microbial source tracking studies can guide remediation practices that will restore the condition of the watershed to safe levels. This project was supported by a grant from the MSU Center for Regional Engagement and by the MSU Undergraduate Research Fellowship program.

9:30 – 9:45 a.m. Dispersal ability of the Frecklebelly Darter (*Percina stictogaster*)

CS = 46

***Brooke Washburn, Carol-Rose Gingras, Jacob Patrick, Dr. David J. Eisenhour, Mentor, Department of Biology and Chemistry, College of Science and Technology**

The Frecklebelly Darter, *Percina stictogaster*, a Kentucky fish of conservation interest, has a poorly-known natural history. We compared the movement of this species, which is highly pelagic, to those of five other benthic or semipelagic darters. The goal of this research was to determine whether pelagic darters move longer distances than do benthic darters and to assess conservation implications. In four reaches of the Red River, Kentucky we tagged 936 individuals of six darter species using subcutaneous injections of visible implant fluorescent elastomer (VIE) in May 2012- May 2013. These reaches, plus an additional four reaches, were surveyed by snorkeling or seining to detect previously tagged fishes. Over seven sampling sessions spanning June 2012 – November 2013 a total of 58 darters have been recaptured, including 20 *P. stictogaster*. Our recapture data indicated three things. First, our studied darters moved little. Second, most movements were upstream. Third, the pelagic and semipelagic *Percina* darter species moved more than the benthic *Etheostoma* species. The greater dispersal tendencies of *Percina* darters may make them more vulnerable to in-stream barriers, such as poorly designed road crossings, than benthic darters. Partial funding was provided by Department of Biology and Chemistry Faculty Research Endowment and an UG Fellowship.

9:45 – 10:00 a.m. Relationship between climatic variables and *Tsuga canadensis* (eastern hemlock) growth rates, Spaws Creek, KY

CS = 47

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

Dendrochronology and dendroclimatology are two disciplines, that, when paired together, allow us to use patterns in dating and standardized width of tree rings to find associations between these annual rings and climatic variables, which can contribute to the reconstruction of past climates. Previous researchers generally avoid using subdominant trees when examining the affiliation between tree growth and climate because they tend to have more confounding variables that can veil the climate signal. The two primary purposes of this study were to determine the correlation between annual ring widths of *Tsuga canadensis* and climatic trends, and to discover the effect of tree crown position on the significance level of these relationships. One hundred and eighty-two samples (150 overtopped/intermediate; 32 co-dominant/dominant) were taken from 91 *Tsuga canadensis* in 30 plots along Spaws Creek in Menifee and Morgan counties. Tree samples will be analyzed to determine annual ring width relationships to three significant aspects of climate, specifically precipitation, temperature, and PDSI (Palmer Drought Severity Index). This research was supported by an MSU Honors Program Undergraduate Research Fellowship.

10:00 – 10:15 a.m. Lichen species inventory for Carter Caves State Resort Park, Carter County, KY

CS = 48

***Victoria Evans, Channing Richardson, Dr. Allen C. Risk, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Lichens are a complex symbiosis made of two components: a fungus and an organism capable of producing food, either algae or cyanobacteria. Lichens are a vital part of forest ecosystems; those containing cyanobacteria are able to convert nitrogen in the atmosphere into usable nitrogen compounds for plants in the surrounding area. They are one of the first pioneers in a new environment, able to colonize rocks, soil, bark, and wood. The primary objective of this study was to conduct a lichen species inventory for Carter Caves State Resort Park through field work and examination of previous collections housed in the herbarium of Morehead State University. A total of 311 specimens have been collected from the park with 108 individual species identified (70 foliose lichens, 20 fruticose and 18 crustose). In order to provide a more complete lichen list for the park, additional areas will be explored during the fall semester of 2014. This research was supported by the MSU Honors program and an MSU Undergraduate Research Fellowship.

10:15 – 10:30 a.m. *Break*

10:30 – 10:45 a.m. *Herbaceous plant species floristic inventory of Carter Caves State Resort Park, Carter County, KY*

CS - 49

****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. This herbaceous inventory will complement previous studies of the pteridophytes and woody plant species in the park. An ongoing inventory of the herbaceous angiosperms of the park includes specimens from an assessment of the Morehead State University Herbarium (MDKY) and those collected from the spring 2013 to the spring 2014 semester. One hundred and seventy-eight species in total were documented thus far. In the 2014 spring and fall semesters, 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 Honors Program Research Fellowships of Morehead State University.

10:45 – 11:00 a.m. *The use of shade shelters by horses under varying environmental factors*

CS - 50

****Brooklyn D. Samons, Dr. Karen Jane Taylor, Mentor, Department of Agricultural Sciences, College of Science and Technology***

As overheating has become a serious hazard for livestock in hot and humid climates, the importance of shade and shelter in outdoor environments has been emphasized by laws and regulations. After over a year of observational study utilizing the Morehead State University farm's herd of horses, it was found that the use of the shelters were independent of environmental factors, if not completely unutilized by the herd. From the conducted study, similar published research was used to compare and contrast the methods used at MSU. This project was a product of the Agricultural Sciences and support of the MSU Honors Program.

11:00 – 11:15 a.m. *X-ray and radio observations of Tycho's Supernova Remnant: Evidence for cosmic-ray acceleration*

CS - 51

****Kristin H. Young, Dr. Thomas G. Pannuti, Mentor, Department of Earth and Space Science, College of Science and Technology***

I present a spectral and imaging analysis made of the Galactic supernova remnant (SNR), Tycho (SN 1572) with the Chandra X-ray Observatory and Morehead State University's 21-Meter Space Tracking Antenna. The primary emission processes of Tycho in the radio and X-ray are synchrotron and thermal bremsstrahlung radiation, respectively. The measured radio flux densities of Tycho (assuming synchrotron origin for emission) permit a measurement of its spectral index. Using the measured flux density of Tycho in the radio, I constrain properties of the hard X-ray emission (synchrotron radiation) produced by Tycho. I compare the properties of selected regions along the entire outer rim of Tycho (covering nearly the entire azimuth) by fitting its spectra with two separate models: Power Law and SRCUT (an exponential cut-off synchrotron model). The model known as APEC is used to account for the thermal component of the detected X-ray emission. This analysis determines the cutoff frequencies and corresponding energies of the cosmic-ray electrons accelerated along the forward shock of Tycho. I estimate the lifetimes of these accelerated electrons as well.

11:15 – 11:30 a.m. Observations of the nearby sculptor group galaxy NGC 7793 made with the Chandra X-ray Observatory

CS - 52

***Biswas Sharma, Dr. Thomas G. Pannuti, Mentor, Department of Earth and Space Science, College of Science and Technology**

We analyzed observations made of the nearby Sculptor Group galaxy NGC 7793 with the *Chandra* X-ray Observatory (CXO). This galaxy – located at a distance of 3.9 Megaparsecs – is a face-on spiral with an elevated star formation rate. Our analysis includes the reduction of datasets corresponding to four different observations made of NGC 7793 with the Advanced CCD Imaging Spectrometer (ACIS) aboard CXO). The four datasets were merged into one image to boost the signal-to-noise with the intent of using the wavelet-based algorithm “*wavdetect*” to detect all of the discrete X-ray sources sampled by the observations. The positions of the sources revealed by *wavdetect* were compared with the positions of previously detected X-ray sources, known discrete radio sources and optically-identified supernova remnants in this galaxy.

11:30 – 11:45 a.m. The characterization and evaluation of extreme sensitivity X-ray detector for measurement of the cosmic X-ray background

CS - 53

***Jordan Healea, Jeff Kruth and Dr. Benjamin Malphrus, Mentors, Department of Earth and Space Science, College of Science and Technology; Sean McNeil, Louisiana State University**

Modern day X-ray and Gamma ray detector technology has allowed for advancement in a range of disciplines ranging from medical imaging to astrophysics research. A new generation of direct bandgap semiconductors utilizing Cadmium Zinc Telluride (CZT) is used in a variety of applications, including radiation detectors, photorefractive gratings, electro-optic modulators, solar cells, and terahertz generation and detection. High energy astrophysics research conducted at MSU involves precise measurements and distribution mapping of the cosmic diffuse X-ray background (DXB) utilizing extremely sensitive X-ray/Gamma ray detectors implemented on small spacecraft platforms. This study involves evaluating CZT detectors used in medical imaging devices for potential use in making precise measurements of the DXB. Requirements for these detector systems include sensitivity from 10 to 80 keV, extremely small current draw, excellent gain and energy resolution, and good spatial resolution that requires 256+ pixels. Characterization of these systems are underway at MSU’s Space Science Center using Cadmium, Cobalt, and Americium as test sources as well as using x-ray attenuation and fluorescence for collimator design and sensitivity characterization. The goal is to adapt and package a high resolution, extremely sensitive X-Ray/Gamma ray imaging module for measuring the DXB on a small spacecraft platform. This research was supported by MSU URF.

11:45 – 12:00 p.m. Break

12:00 – 12:15 p.m. A FITS file generator for mapping observations with the 21 Meter Space Tracking Antenna

CS - 54

***Jesse L. Dailing, Dr. Thomas Pannuti, Mentor, Department of Earth and Space Science, College of Science and Technology**

The standard format for images in the astronomical community is the Flexible Image Transport System (FITS). This format includes standard keywords that define such parameters as central location in Right Ascension and Declination, scale factor and flux unit factor. We are developing a Python-based code including a user interface that creates maps in FITS format from data collected during mapping observations made with the 21 Meter Space Tracking Antenna (STA) at Morehead State University. A crucial component of this code is to apply a Gaussian smoothing to reflect the finite beamwidth of the STA as a function of the wavelength at which the observations are conducted. The usefulness of the code is demonstrated in the creation of a FITS map generated using data collected by a mapping observation made with the STA of the Galactic supernova remnant Taurus A.

12:15 – 12:30 p.m. A catalog of Galactic supernova remnants associated with maser emission

CS = 55

****Jared Napier, Dr. Thomas G. Pannuti, Mentor, Department of Earth and Space Science, College of Science and Technology***

Molecules are known to exhibit distinct features in their spectra due to rotational and vibrational transitions. In astronomy some of these spectral features have crucial applications: for example, rotational transitions of carbon monoxide are useful for both detecting these clouds and determining their motions. MASERS (microwave amplification by stimulated emission and radiation) associated with molecular clouds can be used to identify sites of interactions between these objects and supernova remnants (SNRs). The 1720 MHz line emitted by OH (Hydroxyl) is the primary tool for identifying these interactions in the Milky Way and serve as reliable distance indicators to SNRs themselves. This talk presents a catalog of SNRs that are associated with MASER emission which also feature complementary X-ray observations made by the *Chandra* X-ray Observatory. The Galactic SNR G352.7-0.1 – which *Chandra* has observed and which features maser emission -- will be presented as an illustrative example.

12:30 – 12:45 p.m. Design and development of a digital CricketSat

CS = 56

****Murphy Stratton, Bob Kroll and Bob Twiggs, Mentors, Department of Earth and Space Science, College of Science and Technology***

The Digital CricketSat is an upgraded version of analog CricketSat which is a self-contained electronics system used to teach the fundamental ideas of telemetry transmission, remote data collection, and space mission operations. The CricketSat evolved from the desire to provide a simple, working data and telemetry device at low cost to train students in remote data gathering and recovery methods. The device was designed to be easy to construct with a low parts count yet provide the essential capabilities for data measurement, generation and telemetry transmission. The CricketSat was invented by Bob Twiggs to train engineering students at Stanford University and is now used by NASA and others to simulate complete space missions as a training exercise. The Digital CricketSat is an improved design includes a microprocessor and a new thermal sensor allowing the incorporation of programming into the learning process. Students now learn to interpret a schematic diagram, learn the functionality of electronic components, learn to solder, program the microprocessor to perform specific tasks, and launch the device on atmospheric balloons and collect, calibrate and interpret the data received from the thermal sensor. Also with the new digitized satellite other sensors can be added and controlled with the microprocessor. This presentation provides an overview of the new design and discussed the advantages of this more advanced system.

12:45 – 1:00 p.m. A circularly polarized antenna and phasing network system for nanosatellites

CS = 57

****Kien T. Dang, Jeffrey A. Kruth and Dr. Benjamin K. Malphrus, Mentors, Department of Earth and Space Science, College of Science and Technology***

With the importance second only to the payload itself, the communication system plays an indispensable role and determines the success or failure of a satellite mission. However, all communication systems in satellites have to overcome the same challenge: due to rotation of satellites, RF fading, i.e. antenna polarization mismatching, can lead to instability or even loss of RF connection between the satellite and ground station. To solve this problem, the large, traditional, satellites that cost hundreds of million dollars, implement circular antenna polarization, which is expensive and is large to fit in the 10x10x10 centimeter Cubesat. Eighteen months ago, our team at the Space Science Center, Morehead State University began working on new solutions for this problem. We have successfully developed a circularly polarization antenna system that can be used in a Cubesat. This is an evolution for the Cubesat class satellite: for the first time, a UHF band Cubesat antenna system has been developed that is circularly polarized and fully characterized. This project was supported by Morehead State University Undergraduate Research Fellowship.

1:00 – 1:15 p.m.

Low bandwidth satellite mission operations at Morehead State University

CS - 50

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

Ground station operations are a vital component to a successful space mission. Ground stations are Earth-based antennas, transmitters, and receivers that communicate with spacecraft throughout a mission's lifetime. Ground station operators use ground stations to receive and monitor spacecraft telemetry, and command spacecraft to perform specified actions or update software when necessary. Staff and students at the Morehead State University space mission operations center use industry-standard equipment and software systems to perform ground operations to monitor the operability of spacecraft, ensuring on-orbit mission success. The Center currently operates three Yagi-based UHF uplink/downlink stations and the 21 meter Space Tracking Antenna. An innovative UHF focal plane array feed was developed by the Center's staff for the 21 meter antenna. The recently implemented high gain system is supported by a NASA contract to allow the 21 meter to operate as a node on NASA's Near Earth Network (NEN). Satellites missions currently supported for low bandwidth (UHF) operations include Morehead State and partner missions KySat-2, Eagle-1 (aka T-LogoQube), and missions operated by the private sector for which the Space Science Center provides telemetry, tracking and control commercial services (Planet Lab's Dove-3 satellite). Research support provided by NASA Kentucky.

Concurrent Session – Commonwealth Room

Moderator: Drs. Robert Albert, Dr. Gregory Russell & Dr. Lynn Parsons

9:00 - 9:15 a.m. Confronting misbehavior: The role of implicit theories in enacting ethics centered communication

CS = 59

****Shelby Brickey, Dr. Johnathan Nelson, Mentor, School of Business Administration, College of Business and Public Affairs***

Ethical blunders have highlighted the need to more effectively manage ethical behavior in organizations. Ethics-centered communication has been identified as a tool for fostering ethical behavior. However, there is little understanding as to who chooses to enact ethics-centered communication and why. This research seeks to address this gap in the literature by investigating the role of implicit person theories in the enactment of ethics-centered communication.

Implicit person theories refer to implicit beliefs individuals hold regarding achievement and intelligence, reflecting the degree to which they believe people can change. There are two types of implicit theories. Entity (fixed) theorists believe people can't change. Incremental (growth) theorists believe people can change. For example, someone with an entity perspective views intelligence as fixed; intelligence for these individuals is reflected by low effort successes. An incremental theorist perceives intelligence as more alterable; incrementalists focus on challenges to develop their intelligence. To build upon the knowledge of who enacts ethics-centered communication and why, this preliminary research examines how a person's willingness to speak up when confronted with unethical behavior is influenced by their implicit beliefs about the degree to which people can change. This research was supported by the Greg Palmer Endowment.

9:15 - 9:30 a.m. Fundraising and gender equity considerations in interscholastic programs

CS = 60

****Shannon Callihan, *Nathan Kiser, Dr. Steve Chen, Mentor, School of Business Administration, College of Business and Public Affairs***

Interscholastic sport programs throughout the country had been severely impacted by tough economic recession in last few years. Without adequate funding and proper funding distribution based on gender equality, the female athletic participation will likely be decreased furthermore. To ensure a successful operation of interscholastic athletic programs, this study examined the perceptions of athletic directors and coaches on two key aspects: (a) identifying effective methods for generating athletic funds, and (b) examining the administrators' thoughts on funding female sports and maintaining Title IX compliance. Through an online survey, this study helped identify successful fundraising techniques used by existing athletic programs. It also examined how schools establish a successful, fair, and operative budget for interscholastic sports programs under the Title IX compliance. The results also presented interesting contradictions regarding philosophy on revenue generation and distribution among female and male athletics.

9:30 – 9:45 a.m. Static Vs. Dynamic Routing: A look into the DSD models of a fortune 500 company

CS = 61

****Alyssa Franklin, Dr. Karen Taylor Mentor, School of Business Administration, College of Business and Public Affairs***

This summer I interned for a company and completed a project that focused on delivery routing opportunities for a particular distribution center. This distribution center used dynamic routing to optimize their fleet by changing and eliminating routes daily. By analyzing and interpreting key metrics, I was able to determine lost profit due to refusals, returns, variable labor and warehouse labor losses. This allowed me to determine which delivery routing system was best for the distribution center and the opportunities presented through a change in the distribution center's routing system. I will be presenting my findings and suggesting an optimized solution based on those findings.

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. Impacts of macroeconomic factors on industries' equity returns

CS = 62

****Yen H. Tran, Dr. Ali Ahmadi and Dr. Bo Shi, Mentors, School of Business Administration, College of Business and Public Affairs***

This research project is to examine the impacts of macroeconomic factors on equity returns of different industries in the United States economy. This empirical research intends to give illuminating ideas on how macro-economic cycles affect sector/industry equity performance empirically. The hypothesis of the research is that there are correlations between the daily equity returns of different industries with the macroeconomic factors. Multiple regressions with time series adjustment and/or GARCH will be used to estimate this correlation. The information and data for this project comes from the daily equity returns of different industries of the industry Exchange-traded Funds (ETF) list as well as from the macroeconomic measurements by U.S. Bureau of Labor and the Federal Reserve databases. The project is supported by MSU Undergraduate Research Fellowship.

10:45 – 11:00 a.m. Plan B: The FDA, Federal Courts, and contraceptive drug policy making

CS = 63

****Bradley Fyffe, Dr. William C. Green, Mentor, School of Public Affairs, College of Business and Public Affairs***

Plan B is an emergency female contraceptive pill that the Food and Drug Administration has used its legal authority to regulate, but the federal courts have also been involved in making Plan B decisions. This research explores the FDA's Plan B regulatory actions since 1999, when the agency approved the drug, by addressing the following question: how have the federal courts participated in the agency's regulatory process and influenced its marketing decisions? To answer this question, this research examined the agency's decisions, the arguments of the parties who appealed its decisions, and the reasoning of the federal courts in deciding their cases. This research found that appeals of the agency's decisions produced a dialogue between the FDA and the courts about the age at which Plan B may be purchased and the restrictions on its access. By 2014, this dialogue, defined by federal court decisions, eliminated all age restrictions and expanded access from prescription only to over-the-counter availability.

11:00 – 11:15 a.m. The Lincoln Douglas Debates and the Test of Statesmanship

CS ▪ 64

***Cody Murphy, Murray S. Y. Bessette, Mentor, School of Public Affairs,
College of Business and Public Affairs**

Slavery provides political scientists with the opportunity to study a significant and lasting problem in American History from inception to completion. The events that best encapsulated and expressed the social and political issues stemming from this peculiar institution were the debates between Lincoln and Douglas in 1858. These debates, often taken to be the precursor of the Presidential Election of 1860, illustrated the difficulties that arose from the sectional tensions that existed between abolitionist and pro-slavery forces. Surveying the time spanning English settlement in the New World to the 1858 contest, we see how the Lincoln Douglas Debates defined an era of popular politics and how two statesmen approached the most critical social and political issue of their time, and thereby tried to define a nation. This research was generously supported by an Undergraduate Research Fellowship.

11:45 – 12:00 p.m. Break

12:00 – 12:15 p.m. Rapid prototyping of spacecraft structures at the space science center

CS ▪ 65

***Travis Miller, Dr. Benjamin Malphrus, Mentor, Department of Earth and
Space Science, College of Science and Technology**

Rapid prototyping is widely used in the development of spacecraft structures and systems at the Morehead Space Science Center. It allows the Center's engineering teams to create accurate engineering models of satellite subsystems to facilitate systems design, assembly, and integration. Spacecraft systems are created in virtual space initially, then physical models are prototyped to ensure mechanical interfaces, integration and assembly processes. Mechanical systems are designed and 3-D printed to produce intermediate models that are used to fit check mechanical interfaces. Once a 3-D model is assembled, a flight model is fabricated from flight materials. Electronics systems are designed in PCB software and modeled in virtual space initially. These systems are also 3-D printed to facilitate effective physical integration. Finally, boards are spun, populated and tested to produce the flight electronics. Numerous revisions are produced with modifications and improvements based on testing earlier revisions. Engineering models of the spacecraft are then subjected to extensive functional and environmental testing. Final revisions are made based on the results of these tests and are incorporated into the final flight models. The process of spacecraft systems design is complex and requires extensive testing and iteration. Rapid prototyping greatly facilitates these processes reducing development time and costs.

12:15 – 12:30 p.m. Space communications systems verification in the Morehead State University electromagnetic anechoic chamber

CS - 66

****Chris Graves, Bob Kroll, Jeff Kruth, and Dr. Benjamin Malphrus, Mentors, Department of Earth and Space Science, College of Science and Technology***

The Morehead State University Space Science Center anechoic chamber is an experimental laboratory that simulates the electromagnetic environment of space to allow testing and measurement of satellite systems, antennas and antenna components. An anechoic chamber is essentially an experimental room lined with RF absorbent material and which contains an antenna positioner and controller that allows for a variety of empirical measurements of antenna performance. The facilities allow MSU to test antenna systems designed for spacecraft and to characterize the RF performance of space-based and ground-based (Earth station) antenna systems developed in-house. . The anechoic chambers facilitate empirical measurements of antenna parameters such as radiation patterns, gain, system temperature profiles, astronomical radio source gain-to-noise temperature ratio (G/T), cross-polarization isolation contours, and effective isotropically radiated power (EIRP) stability. Measurements of critical characteristics of communications systems are made (antenna gain and radiation patterns, system EIRP, etc.). The radiation pattern shows the angular distribution of the radiated field for a transmit antenna. It is the relative response to the plane waves from different angles for a receive antenna. Numerous spacecraft communication systems and Earth station feeds have been measured in the MSU EM Anechoic Chamber.

12:30 – 12:45 p.m. Determining attitudes of satellites within Earth’s gravitational field with the helmholtz coil

CS - 67

****Mathew Hardin, *Zachary Taulbee, Jeffery Kruth, Mentor, Department of Earth and Space Science, College of Science and Technology***

A Helmholtz coil is a widely-used device that produces a region of nearly uniform magnetic field. It can be used to cancel the Earth’s magnetic field allowing measurements of satellite attitude control systems by making the net magnetic force on the satellite equal to 0. This type of simulation can be utilized for smaller class satellites (including nano or femto class smallsats) that use magnetic torque coils to control their attitude within the space environment in order to maximize both the data being collected, and the control over sunlight collection by solar panels. To tune and fully characterize the torque coils, a Helmholtz coil is used to provide a simulated environment for testing. A Helmholtz coil is essentially two solenoid electromagnets spaced at a specified distance apart with a precise conductor wrapping that produces a range of fields in which the mid-plane of the two electromagnets has a net force of 0. The Space Science center is developing a triple axis coil to allow a 3 degree of freedom measurement of satellite dynamics. The design will result in a 2 meter cube and should produce between .5 gauss to 1 gauss of magnetic force. This research was supported by MSU Undergraduate Research Fellowship.

12:45 – 1:00 p.m. Analysis of nighttime sky brightness data from January to May 2013 in Morehead, KY, and the effect of cloud cover and lunar phase on overall brightness

CS 68

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

The overuse of artificial light at night is responsible for a pervasive astronomical and ecological problem known as light pollution. We monitored night- sky brightness (from sunset to sunrise) using the Unihedron “Sky Quality Meter” with lens and Ethernet connectivity. We perform a simple statistical analysis of the data from January to May 2013. We determine the daily minimum, maximum, and average values of night 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 were found to be 475% brighter than a pristine and unpolluted dark sky. We examine the effect of cloud cover during both new moon and full moon nights and find that cloud cover significantly amplifies the effect of light pollution.

1:00 – 1:15 p.m. Quantum efficiency of nano rod CdS implanted in CdTe photovoltaic cells

CS 69

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

Quantum Efficiency (Q.E) is a measurement that is widely used to determine how well a photovoltaic cell will perform in the sunlight. Researchers mainly use the Q.E value to determine how much current the photovoltaic cell will produce when a photon of a certain wavelength has passed through the cell. At MSU Q.E measurement is being run on photovoltaic cells that were designed by the University of Kentucky, College of Engineering. The experimental setup was designed and built by a colleague and I here at MSU. The cells are not like the traditional photovoltaic cells where a layer of CdS is placed on top of a layer of CdTe. The cells that are being tested have CdS nano rods that are placed into the CdTe to help absorb the photons in the lower part of the visible spectrum.

Concurrent Session – Eagle Dining Room

Moderator: Drs. Margo DelliCarpini and Dr. Christopher Miller

9:00 - 9:15 a.m. Developing early numeracy

CS - 70

+Kelsey Koontz, Dr. Edna O. Schack, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education

The purpose of this study is to examine the effectiveness of specifically designed one-on-one intervention strategies on the development of Early Numeracy using fluency assessments. Two students of similar academic standing will be selected to participate in this research opportunity. Both students will be administered an initial fluency assessment to determine their current mathematics understanding. The assessment comes from Kentucky Center for Mathematics as outlined in the Enacting Effective Response to Intervention professional development course. The knowledge and resources from this course will be used to prepare intervention strategies that specifically match student needs. The preparations and methods will be planned in accordance with various literature publications focused on developing Early Numeracy (Wright, Martland, & Stafford, 2000 and Thompson, 1997). One student will be selected to participate in one-on-one intervention sessions twice a week. The other student will receive general classroom instruction, but not one-on-one intervention to serve as a control. Both students will be administered the same fluency assessment every other week to track their progress. After four weeks a final fluency assessment will be administered to draw conclusions. The desired outcome is for the student receiving intervention to experience significant growth as compared to the control.

9:15 - 9:30 a.m. Preschool children’s fine motor development through paper folding activity

CS - 71

***Heather Travis, Maggie Horton, Dr. Mee-Ryoung Shon, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education**

Previously, similar study was conducted at Rowan county kindergarten class, which enhanced children’s understanding on math language through the use of bodily-kinesthetic, spatial, and logical-mathematical intelligences. The purpose of this project is to investigate if origami paper folding enhances preschool children’s fine motor development, one of the Early Childhood Standards, “Children perform fine motor tasks using eye-hand coordination.” Each week, a class at Rowan County preschool children was introduced to a new origami activity. This activity is accompanied with a poster board with step-by-step written instructions and 3-D examples as visual cues for children to follow. The children are assessed on their ability to make folds, creases, and fold the paper in half on a scale of 0-3 with anecdotal notes. The result demonstrated increased fine-motor skills as well as increased understanding on math language (direction, sequence, position, size/shape), which encounters one of the Math Early Childhood Standards, Benchmark 1.2 “Recognizes and describes shapes and spatial relations.

9:30 – 9:45 a.m. Addition by inscription: Strategies for incorporating writing into the math classroom and the associated benefits

CS - 72

****Kristen Stacy, Dr. Karen Taylor, Mentor, Department of Middle Grades and Secondary Education, College of Education***

The world of education is constantly evolving to include improved techniques, strategies, and approaches for learning. Each year teachers at all levels are faced with additional requirements which, in turn, bring on more challenges. One of the most recent examples is the implementation of new English Language Arts Common Core Standards. These standards require educators from all content areas to incorporate writing into their instruction. This can often seem like a difficult task, especially in the mathematics classroom. However, this is a challenge that can easily be conquered by including effective strategies and activities into lesson plans. Three examples of activities that meet ELA standards and also benefit math students and teachers alike are RAFT writings, process logs, and journaling.

9:45 – 10:00 a.m. Co-Teaching: Effects on student achievement

CS - 73

+Stephanie Gebka, Dr. Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education; Professional Partnership Network, College of Education

This project analyzes the effect that a MSU student from the Professional Partnership Network (PPN) has on student achievement. The goal of this project is so show the benefits of the PPN program in Rowan County schools. The data for the project was gathered through analyzing students' social studies learning logs. The students are to keep up with their logs through adding to their table of contents, recording the date, tile, page number and all notes. This study compared the notebooks of students who have a PPN student working in the classroom and students who do not have a PPN student working in the classroom. The data strongly supports the assertion that students who have a PPN co-teacher in the classroom, obtain higher levels of achievement.

10:00 – 10:15 a.m. Using constant time delay to teach discrete skills to individuals with significant disabilities

CS - 74

****Amy Clausen, *Olivia Fulton, Dr. Sarah Hawkins-Lear, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education***

Constant Time Delay is an errorless teaching strategy widely used in the field of special education. The presented study was conducted to examine the effects of Constant Time Delay when teaching discrete target skills to students with significant disabilities. Two subjects participated in the study (Subjects A and B). Subject A was a sixth grade male with autism learning to identify health service professionals, and Subject B was a first grade male with intellectual disabilities learning basic sight words. Baseline, intervention, maintenance, and generalization data were collected throughout the research study. The results indicate that when Constant Time Delay is implemented, students make progress beyond baseline data and can maintain and generalize the skills at high accuracy rates. This study concludes that when systematic instruction is implemented to teach target skills, students achieve and maintain the skills with high accuracy and then generalize across people, environments, and materials.

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. Using 21st century tools and clinical medical model practices to teach classroom management skills

CS - 75

+Helen J. Rader, J.P. Rader, David R. Riel, Dr. Carol Christian, Mentor, Department of Foundational and Graduate Studies in Education, College of Education

This research investigated the value of utilizing 21st century learning tools to prepare teacher candidates. This study utilized techniques that are commonly used in the medical/clinical model to prepare physicians. The researchers provided classroom management clinical learning experiences using avatars, video analysis, and simulations/role plays to determine if these three 21st century teaching tools better prepared candidates to meet the demands they will likely face when they enter the classroom as a first year teacher. In various stages of their work they partnered with three other universities making use of the University of Kentucky's medical simulation facilities, the University of Central Florida's TeachLivE (TLE) avatar classroom and Pace University's video case study analysis. The study's findings indicated that teacher candidates were very positive about their participation in all three clinical training experiences and indicated that their feeling of preparedness to effectively implement classroom management was enhanced as a result of the authentic training experiences.

10:45 – 11:00 a.m. Faculty perceptions of learning spaces

CS - 76

+Doyle Friskney, Dr. Christopher Miller, Mentor, Department of Foundational and Graduate Studies in Education, College of Education

The case study researched faculty perceptions of learning spaces and the impact on student persistence at two community and technical colleges. Through a qualitative methodology involving a literature review, surveys, and interviews with faculty and the college President, the researchers found that learning spaces, which enhanced student engagement and collaboration, could positively impact student persistence.

The population of this case study was full-time and adjunct faculty who taught face-to-face classes at two community colleges. Data was collected through a survey and individual semi-structured interviews. The survey of faculty at the two community colleges indicates a majority of their classrooms are designed for lecture instruction. That leaves a strong possibility that there are changes that can be made to their existing learning spaces which can complement persistence efforts. The capstone project included creating an interactive learning space repository using social network resources that provides frameworks, toolkits, blueprints, photographs, vendors, and technologies used in creating learning spaces.

11:00 – 11:15 a.m. Factors influencing graduate student membership in the Association for Educational Communications and Technology (AECT)

CS - 77

+Valerie Paige Hale, Dr. John Curry, Mentor, Department of Foundational and Graduate Studies in Education, College of Education

Contemporary scholarly societies are at a crossroads, and their perceived relevance, membership rolls, and influence are all at stake. One's membership in a field-specific professional organization was once taken for granted and viewed as a core component of what it meant to be a professional (Fitzpatrick, 2012). Ample research exists extolling the benefits of professional association membership (Desmond & Symens, 1997; Hall, 1993; Young & Boling, 2004; Thomas, Inniss-Richter, Mata, & Cottrell, 2013). Traditional benefits include access to current research through scholarly journals, networking, career development, and opportunities to present at conferences (Young & Boling, 2004). This study, sponsored by the organization itself, seeks to identify factors driving graduate students' decisions of whether or not to maintain membership in the Association for Educational Communications and Technology (AECT). This study will explore whether the traditional benefits of membership are compelling reasons to drive both interest in and the long-term investment of time and resources of today's graduates. It will also explore whether other factors may be driving students' decisions not to maintain membership in their respective scholarly societies. The results of this study will be used help to inform recruiting efforts, fortify membership, and build commitment in the graduate student segment of AECT.

11:45 – 12:00 p.m. *Break*

12:00 – 12:15 p.m. *Improving hot mirror design to increase halogen capsule efficiency*

CS - 78

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

The Department of Energy has increased the lighting efficiency standards for all light sources. In an effort to meet these standards and offer an affordable lighting option, lighting manufacturers are looking for ways to increase the efficiency of halogen light bulbs. The only possibility to achieve this is with a light source that uses the non-visible portion of light in the infrared region to increase the light yield from the source. This is accomplished by applying a thin film coating that is designed to act as a hot mirror and reflect the IR energy back into the lightbulb and increase the visible light produced. Current designs can increase efficiency around 27%; this study is evaluating other designs to improve the efficiency at or above 30%. Some of the areas focused on for improvement are, varying film layer thickness and varying numbers of layers.

12:15 – 12:30 p.m. *A history of magic squares*

CS - 79

****William Parker, Dr. Doug Chatham and Dr. Randy Ross, Mentors Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Magic squares are an arrangement of natural numbers from 1 to n^2 in an $n \times n$ matrix such that each number occurs exactly once, and the sum of the entries of any row, column, and main diagonal are equal. Beginning in China over two thousand years ago, magic squares gradually spread across the globe influencing religion, art, and mathematical discovery. In the early 20th century, magic squares influenced an entirely new area of recreational mathematics, creating new mathematical shapes based on the principles of magic squares. In this study we investigate the rich history of magic squares from China to present day, including a look at other "magic" shapes.

12:30 – 12:45 p.m. *Data mining on medical data*

CS - 80

****Scott Blankenship, Heba Elgazzar, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Medical data is always of much importance. It is important to be able to analyze and mine these medical data to find interesting knowledge and patterns that can help in the process of curing and early detection of diseases. In this research project, we focused on the problem of mining disk hernia and spondylolisthesis data. This problem is very interesting and it has a difficulty to recognize patterns. Three techniques were used in mining this data. The data is split into six features and one classifier which was normal or abnormal. The three techniques are ANN, Bayesian classification, and k-nearest neighborhood. All of these techniques are using data mining algorithms to find similarity between data samples. The data must be split, which makes the process of data mining more complex. Looking for a perfect split is the ideal option for finding the best performance accuracy. It is important to find the best split for learning from the data and for testing the algorithms. These algorithms were tested using WEKA. The results show that the most accurate technique that can be used for this medical data is the Bayesian classification.

12:45 – 1:00 p.m. **Using LabVIEW to control the quantum efficiency experiment for solar cells**

CS - 81

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

The quantum efficiency measurement is an experiment commonly used to determine how well solar cells turn sunlight into electricity. The measurement is attained as a function of wavelength of incident photons on the solar cell. The apparatus for this experiment was recently constructed at MSU. To control this experiment, a program was developed in National Instruments LabVIEW 2011, a graphical programming environment. We will explore the design and operation of this program, which allows the user to control multiple external devices, manage experiment parameters, and view results in charts and graphs. The program also collects and processes data, and manages the input and output of data files. Using LabVIEW to manage dataflow and control processes allows the user to conduct experiments quickly and painlessly, from a single location.

1:00 – 1:15 p.m. **Heesch's tiling problem: To infinity and below**

CS - 82

***Chelsea E. Tucker, Dr. Robin Blankenship, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

A *tessellation* is a tiling of the plane with no gaps or overlaps. For example, the plane can be tessellated by a square. Some tiles cannot tessellate the plane. The number of layers of tiles that can be placed around a center tile is called the *Heesch number*. Various tile shapes are investigated with Heesch number 0 and 1, and a summary of tiles with Heesch number 5 or less is provided. It is not known if there exists a tile with finite Heesch number greater than 5.

Concurrent Session – Eagle Meeting Room

Moderator: Dr. Ahmad Zargari

9:00 - 9:15 a.m. Development of a versatile and efficient Electrical Power System for small satellites

CS - 83

***Kien T. Dang, Kevin Z. Brown and Dr. Benjamin K. Malphrus, Mentors, Department of Earth and Space Science, College of Science and Technology**

All satellites require power generation systems that must provide power to all satellite subsystems. The power source can be solar photovoltaic (solar panels), solar thermal dynamic, radioisotopes, fuel cells or nuclear systems, but eventually it must be converted to electricity to run the systems in a satellite. This is the role of the Electrical Power System (EPS). For a CubeSat class satellite, an EPS must be powerful enough to satisfy all power requirements, clever enough to protect the batteries and other systems in under-powered, over-powered, or confusion situations, fault tolerant enough to survive in the radiation environment in space and small enough to fit inside the nanosatellite. Our team at the Space Science Center, Morehead State University, has developed a series of EPS systems. The current revision incorporates multiple improvements, including greatly increased number of power inputs and outputs, increased efficiency, a much simpler mechanical design, temperature measurement, and LEDs error coding. Such an ultra-low power consumption, high power, high efficiency, and ultra-small form EPS can support cubesat sizes from 1U to 6U. A revision of this EPS was launched on an Italian micro satellite Unisat 5 in November 2013. This project was supported by Morehead State University Undergraduate Research Fellowship.

9:15 - 9:30 a.m. X-ray and radio observations of the spiral galaxies NGC 45 and IC 342

CS - 84

***William P. Moffitt, Dr. Thomas G. Pannuti, Mentor, Department of Earth and Space Science, College of Science and Technology**

We have analyzed data from observations made with the *Chandra* X-ray Observatory of NGC 45 and IC 342, two nearby spiral galaxies. NGC 45 has a low star formation rate whereas IC 342 has a high star formation rate. The x-ray properties, such as luminosity and discrete source population, were compared. NGC 45 has been observed multiple times, while IC 342 has only one observation made with *Chandra*. NGC 45 had a total effective observing time of 30.6 kiloseconds, and IC 342 had an effective observing time of 57.8 kiloseconds. Standard analysis process tools using the Chandra Interactive Analysis of Observations (CIAO) software package were applied to these datasets. The detected sources were compared to previously published radio sources found in other works. In total, 36 sources were found in NGC 45 and 56 sources were found in IC 342. A background galaxy cluster was found among the detected sources for NGC 45. We also plan to make observations of the galaxies using the 21-Meter Space Tracking Antenna.

9:30 – 9:45 a.m. A Chandra observation of the mixed-morphology supernova remnant W28 (G6.4-0.1)

CS = 85

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

We present our spectral analysis of an X-ray observation made of the mixed-morphology supernova remnant (MM SNR) W28 (G6.4-0.1) with the *Chandra* X-ray Observatory (CXO). W28 is an archetypical MM SNR that features a shell-like radio morphology with a contrasting center-filled X-ray morphology that defines sources of this class. We have extracted spectra from W28 and attempted a fit using the parameters of the two thermal component model given in Rho & Borkowski (2002). We do not obtain an acceptable fit with these parameters. We then added a third thermal component and obtain an acceptable fit with physically reasonable parameter values: we believe that the third temperature component originates from the diffuse Galactic Ridge X-ray Emission (GRXE) that is seen toward W28. A hard X-ray source is seen toward the southwest of W28. Assuming a kick-velocity of 1000 km/s (the high-end velocity for asymmetric core-collapse supernovae) and assuming the age of W28 to be between 3.5×10^4 and 15×10^4 years, it is physically reasonable for this hard X-ray source to be a pulsar associated with W28. This work has been supported by an Undergraduate Research Fellowship and a grant from the Kentucky Space Grants Consortium.

9:45 – 10:00 a.m. Nighttime sky brightness data analysis and effect of cloud cover and lunar phase on brightness

CS = 86

****Lauren Duffy, 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 monitored night- sky brightness (from sunset to sunrise) using the Unihedron “Sky Quality Meter” with lens and Ethernet connectivity. We perform a simple statistical analysis of the data from January to May 2013. We determine the daily minimum, maximum, and average values of night 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 were found to be 475% brighter than a pristine and unpolluted dark sky. We examine the effect of cloud cover during both new moon and full moon nights and find that cloud cover significantly amplifies the effect of light pollution. UG Fellowship

10:00 – 10:15 a.m. Environmental radiation analysis of a sample of soil from southeastern Kentucky

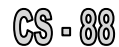
CS = 87

****Christopher T. Braccini, Dr. Ignacio Birriel, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

This is the analysis of radiation emission from a sample of soil from southeastern Kentucky that exhibits radiation in excess of background. The project consisted of using a multichannel analyzer (MCA) to detect gamma ray emissions from the soil in a shielded environment. Background subtraction is first performed on the data and the energy peaks were analyzed to assign probable isotopes. Using an analysis of the full width at half maximum (FWHM), error inherent in the detector as well as the data’s standard deviation allowed assessment of the accuracy of isotopes assigned. All isotope determinations were within the data resolution and within 3 standard deviation of the actual value for the isotope. This allowed for high confidence in all isotope determinations for the five newly discovered peaks.

10:15 – 10:30 a.m. *Break*

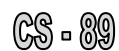
10:30 – 10:45 a.m. Image recognition and classification using multi-histogram approach



****Jorge Chang, Heba Elgazzar, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

The purpose of this project is to develop and optimize a content-based image retrieval system that can be used to compare an input image against a database of images to retrieve similar images and categorize it. The comparison is based on the actual contents of these images. A number of popular image processing techniques that can be used to extract important features from images were considered to increase the matching performance. We propose a multi-histogram approach that includes standard, global and semi-global edge histogram, and color histogram. Additionally, different data mining techniques were considered to classify the images using Weka, a library for the implementation of data mining techniques. In this presentation, we take a look at how these different techniques work along with their strengths and weaknesses in order to find a good balance for a functional content-based image retrieval system. This research was supported by MSU Undergraduate Research Fellowship.

10:45 – 11:00 a.m. User interface and database design for timetabling

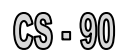


****Dylan Harget, Dr. R. Duane Skaggs, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Timetabling is the process of creating a schedule that specifies the times and places at which events will take place. University timetabling is a particular timetabling problem that focuses on the scheduling of classes within a university. With the careful consideration that is needed for the University timetabling criteria (classes to be taught, classrooms available, professor preferences, and many other criteria) it is no surprise that this type of problem is considered very difficult.

We present a solution to a particular University timetabling problem through the implementation of a class scheduling system. This proposed system utilizes genetic algorithms, a user interface, and a relational database to solve this particular university timetabling problem.

11:00 – 11:15 a.m. PeerSync: Synchronizing without servers



****Wesley Kelsey, Dr. Heba Elgazzar, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Over the past several years, file synchronization has become a useful tool, made popular by its inclusion in cloud-based storage services, for those who use multiple systems when doing their work (i.e. they may move from a desktop to a laptop for portability). However, the client-server based architecture of these services, as well as their inherent requirement for the user's data to go to systems not under their control has drawbacks in privacy and availability. There are do it yourself cloud solutions that one can setup on a computer they own that provide the same kind of cloud storage and file synchronization capabilities, however, they are client-server based as well, and server setup and maintenance is not for everyone. Here, a new application for file synchronization is presented that, instead of using the traditional client-server model, uses a peer-to-peer model of networking. The use of this model should allow for one to enjoy the benefits of file synchronization without the data ever needing to leave any of their computers or requiring any complex setup or extra hardware.

11:15 – 11:30 a.m. Robotic Checkers

CS - 91

****Robert S. Hatfield, Dr. Sherif S. Rashad, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

The goal of this project is to write software that will play checkers with a real checker board. The software will manipulate an OWI Robotic Arm to pick up and move its tokens in a series of calculated maneuvers designed to defeat a human opponent. Two webcams will be used to monitor the state of the board and provide feedback for the position of the arm. This project draws upon studies of game theory, inverse kinematics, visual object recognition, and robotics in order to bring the computer opponent out of the screen and into the real world.

11:30 – 11:45 a.m. Graphs with disjoint dominating sets and identifying codes

CS - 92

****Mark Sticklen, Dr. R. Duane Skaggs, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

A graph is a collection of dots, called vertices, which are joined by lines, called edges. Vertices can be used to describe entities while edges represent relationships between those entities. As a result, graphs have been applied to problems in a variety of fields including chemistry, physics, economics, computer science, and sociology.

A dominating set in a graph is a set S of vertices such that every vertex not in S is adjacent to a vertex in S . An identifying code C is a dominating set such that no two vertices in the graph are adjacent to exactly the same vertices in C . We provide a constructive characterization of certain graphs whose vertex sets can be partitioned into a disjoint dominating set and an identifying code.

P - 1

The influence of bordering nations on country political risk

Crager

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

Political risk ratings are widely used by businesses and governments to assess a country's political stability with respect to factors such as government stability and accountability, socioeconomic conditions, internal and external tensions and/or conflict, law and order, and bureaucracy quality. The goal of this study is to better understand how a country's own level of political risk may be influenced by that of its neighboring countries. Using industry-standard data for over 100 countries, this study examines the relationships between measures of country political risk and (a) the number of neighboring countries in each political risk category and (b) the fractional border length shared with neighboring countries in each political risk category. This study was supported by a MSU Undergraduate Research Fellowship.

P - 2

Over time: Simultaneous progression and dormancy in similar Kentucky communities

Crager

***Sarah Caitlin Woodall, Dr. Michael W. Hail, Mentor, School of Public Affairs, College of Business and Public Affairs**

Within the past several decades, Kentucky has experienced several changes in governmental policies and infrastructure. These changes have led to an increase in revenue, tourism, and overall productivity in several communities, whereas other communities have remained in a state of inaction, or even seen a decline in the aforementioned areas. This research explores these differences have developed, focusing on aspects such as staffing of local government buildings, county-wide infrastructure, and political contrasts, in an effort to determine what has encouraged the progress in some communities, and what could be changed to promote growth in struggling or inactive regions. These are assessed comparatively within the U.S. system of federalism.

P - 3

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.

*undergraduate student presenter

+graduate student presenter

P - 4

Leveraging social media to support business education

Crager

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

The use of social media has grown significantly over the past decade. Student familiarity with social media creates an opportunity to leverage this knowledge for learning class content and collaborating with other students in face-to-face and online courses. As such, instructors have begun to identify opportunities for integrating social media into their teaching. Using social media facilitates a number of beneficial student outcomes, including active learning, networking, and student collaboration. However, not all social media are equally advantageous and the great number of social media can make it difficult to determine what social media to use in instruction. There is a growing body of research examining the strengths of social media supporting learning objectives. This presentation will provide an overview of this research on the benefits and limitations of social media for student learning with an emphasis on business education. Before integrating social media into their teaching, instructors must weigh these benefits and limitations to decide how to best use social media in their courses. By understanding the strengths and weaknesses of different social media, instructors can better choose between the social media options available. The MSU Undergraduate Research Fellowship Program supported this research.

P - 5

A comparison of entrepreneurial knowledge between middle school students and college students

Crager

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

The purpose of this study was to examine pre/post tests of entrepreneurial and business plan content, aligned with state core standards in math and language arts, to determine changes in knowledge. The test was administered to middle school students in an eastern Kentucky county and freshmen college students at Morehead State University. Data collection occurred in Fall 2013. The analysis included: defining an entrepreneur, understanding the economy, assessing differences between revenues and profits, recognizing factors about entrepreneurship, identification of productive resources and efficiencies in productivity, among other business content. Differences found between the two groups are reported for the middle school students and the college students as well as differences between gender. Research was supported by MSU Undergraduate Research Fellowship.

P - 6

The implementation and benefits of client relationship software for a local Kentucky food bank

Crager

****Gabriel Ferguson, *Justin Young, Dr. Scott Wymer, Instructor, Dr. Randall McCoy, Mentor, Department of Computer Information Systems, College of Business and Public Affairs***

According to the organization, Feeding America, Kentucky ranks the fourth in the nation for poverty, 17th in household food security with a rate of 17.2%, and 28th in child food insecurity at 22.4%. In Kentucky, food banks around the state aid needy families with the food they simply cannot afford. Morehead State University's Computer Information Systems Spring 2014 capstone course (CIS 490) took on the project of repurposing and providing a computer system for the Powell County Emergency Food Bank. Client Relationship Management (CRM) software was implemented at the site, along with a transition to paperless recordkeeping to better serve the residents of Powell County, Kentucky. Funding for the project was provided by H&R Block franchise owner, Gail Story.

P - 7

A comparison of entrepreneurial perspectives between middle school students and college students

Crager

****Sarah George, *Kelsey Kuessner, Dr. Janet Ratliff and Dr. Beverly McCormick, Mentors, School of Business, College of Business and Public Affairs***

The purpose of this study was to examine a pre/post survey of entrepreneurial perspectives administered to students in entrepreneurship programs at middle schools in an eastern Kentucky county and college students at Morehead State University. Data collection occurred in Fall 2013. The analysis included: defining an entrepreneur, types of businesses affiliated with entrepreneurship, ranking of the most important attributes of an entrepreneur, a person's own ranking of personal entrepreneurship attributes, views of entrepreneurship overall, and contributions to society, locally and beyond. Differences found between the two groups are reported as well as differences found between males and females. George and Kuessner are an Undergraduate Fellow through the Honors Program.

P - 8

Service learning program: Faculty members' perception of service learning courses in curriculum

Crager

****Tyler Lambert, Adriana Neely, Dr. Steve Chen and Dr. Janet McCoy, Mentors, School of Business Administration, College of Business and Public Affairs***

Service-learning is a form of experiential learning that incorporates academic focus with useful skills applied in the workforce. To promote faculty members' engagement in service-learning, a survey was conducted at a regional public university in eastern Kentucky to examine the faculty's perceptions and expectations toward this high-impact teaching strategy. Eighty-five faculty members completed a self-created questionnaire based on six existing survey-learning evaluation tools. Using a 5-point Likert scale, participants were asked to rate factors related to service-learning such as reasons for involvement, potential benefits and shortcomings of this pedagogy, and perceived support provided by the institution. The results showed that faculty participants highly valued service-learning, since it enhanced student learning and supported community partners. This perceived benefit was also the primary factor driving the participants to partake in service-learning. Participants also showed support in continuing or beginning a service-learning program in the near future. However, concerns related to how the adoption of service-learning may impact faculty members' performance in research and professional service areas were identified. It is believed that service-learning would help students build hands-on experience and networking opportunities for future employment. Those satisfied with their service-learning experience tended to perceive the benefits of service-learning highly.

P - 9

Regime change and constitutional design in the Middle East after the Arab Spring

Crager

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

This study chronicles efforts at constitutional reform in the Arab world in the wake of the Iraq war, and more recently, the uprisings that began in 2011, now known as "the Arab Spring." To what extent are the new democratic constitutions that have been established likely to achieve the objectives of classical liberalism—including the limitation of government power, the establishment of a private sphere within which the individual is free to pursue happiness as he or she defines it, the limitation of the influence of religion in politics, the rule of law, universal equality before the law, stability, a tolerant civil sphere, etc.? What lessons should U.S. policy makers draw from the last decade's tumultuous democratization experiments in the Middle East? This research project, generously supported by an Undergraduate Research Fellowship, examines the constitutional design literature and evaluates the recent Iraqi and Egyptian constitutional experiments—and the democratic processes which yielded them—in light of that literature.

P - 10

Time to cheer up! College students' perception on cheerleading as a sanctioned collegiate sport

Crager

***Kelsey Sphar, Brooke Mead, Dr. Steve Chen and Dr. Cassandra Smith, Mentors, School of Business Administration, College of Business and Public Affairs**

The U.S. Supreme Court's ruling on the Quinnipiac University's case in 2012 had great impact in collegiate female sports since the number of female participation in cheerleading cannot be counted toward the Title IX compliance (Hosick, 2010). This ruling generated a heated debate whether cheerleading can be considered as a competitive sport. This study specifically addressed university students' viewpoints toward this issue. Two hundred and twenty four voluntary participants (114 males, 110 females) responded to a survey in various classrooms, cafeteria, and athletic training room from April 1 to April 22, 2013. The survey questionnaire was created basing on past literature that contained a total of 19 items covering major constructs such as: (1) participants' demographic information, (2) perception on cheerleading as a competitive sports, (3) characteristics and requirements for judging a sport as being competitive, and (4) overall impression toward cheerleading and stunt (a new sport sprung from cheerleading). In conclusion, a high percentage of participants (>80%) perceived that cheerleaders as extremely athletic and favored the idea of adopting cheerleading as a NCAA sanctioned sport. The financial sufficiency of the sport and concern on gender equality were viewed as less important requirements.

P - 11

Discovering the hidden self: Case studies of "at risk" students

Crager

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

Independent study programs and group/class art lessons were created for students at the Bluegrass Discovery Academy (Rowan County Alternative Middle and High School). Case studies of individual students and their development throughout the fall 2013 and spring 2014 semesters were created. Intensive, individual work with two students took place, along with group work with the middle school class and the high school class. The researcher approached working with students as a teacher-observer, where she taught art and gathered data simultaneously. Data included written recordings of observations and dialogue between the researcher and students, along with photographic documentation of student work. Reflective journaling also allowed the researcher to consider the data in the context of her experiences and perceptions. Findings include the development of inclusive and empathic approaches to teaching "at-risk" students and the creation of meaningful curriculum that takes into account the struggles and experiences of students. This research was supported by a MSU Center for Regional Engagement Undergraduate Fellowship.

P - 12

Planning and implementing a successful community-building conference at the collegiate level

Crager

***Caitlin Farhat, Randy Manis, Mentor, Department of Communication, Media, and Leadership Studies and Center for Regional Engagement, Caudill College of Arts, Humanities, and Social Sciences and College of Business and Public Affairs**

The primary focus of this engagement project was to plan and implement the 2014 Kentucky Collegiate Leadership Conference (KCLC) at Morehead State University (MSU). To build a foundation for this project, the student event organizer studied materials from previous conferences and utilized the text, *Event Planning* by Judy Allen (2009). The student event organizer worked closely with the KCLC advisory board and MSU planning committees. The project outcomes included the implementation of the event on Saturday, February 8, 2014 and an evaluation of the overall effectiveness and quality of the conference. The student event organizer was also responsible for the planning and management of real-time social media throughout the course of the event. This Regional Engagement Fellowship was multifaceted and therefore met several community-building needs such as the growth and development of student leaders in the Commonwealth, as well as highlighting the opportunities presented by MSU. This research was supported by MSU Center for Regional Engagement.

P - 13

Leadership lessons learned at summer camp

Crager

***Allison Johnston, Noel Earl, Mentor, Department of Communication, Media, and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences**

The purpose of this qualitative study was to investigate the leadership characteristics and lessons that are learned in a summer camp environment. This was inspired by the award winning novel *The Cabin Path* by Jay Gilbert and compared to the popular *Reframing Leadership* by Bolman and Deal using a typological approach. The hypothesis was that those leadership lessons identified by Jay Gilbert were in fact, essential to becoming a leader. The goal was to establish the lessons outlined in the novel as compared to the theory and identify their value beyond summer camp into a career field and adulthood.

P - 14

Rural reluctant readers: The role of identity in learning to read in high school

Crager

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

A class of high schoolers were studied with a focus on a small cluster of individuals in order to ascertain an optimal method of fostering reading skills and inclination, as well as determining what leads a student to consider themselves competent. Reading journals, literature circles, interviews, and field observations were all employed to determine the students' level of interest. Book talks, literature reviews, and other methods were utilized in an attempt at fostering interest. The students were provided with reading materials tailored to their interests. The presenters' role in the study was funded by their respective Undergraduate Research Fellowships. The study was funded, in part, by a Matched Fund Grant from The Center for Regional Engagement at Morehead State University.

P - 15

The advantages and disadvantages of the writing studio model

Crager

***Devon R. Collins, *Lauren F. Evans, *Megan M. Ison, Dr. Deanna Mascle, Mentor, Morehead Writing Project, Department of English, Caudill College of Arts, Humanities, and Social Sciences**

Despite a dozen years of formal writing instruction, many students continue to struggle with writing when they enter college. These struggles are often the result of the belief that the student is not and cannot become a writer. This lack of confidence negatively affects student motivation and performance which can have a severe impact on student success in college and beyond. This participatory research project is studying the impact of a pilot Writing Studio program on this cycle of writing failure. The Writing Studio has been successfully used at other institutions to provide individualized writing instruction in a small group setting.

We discovered that the MWP Writing Studio has a tremendous impact on the development of struggling writers. The writers we worked with reported increases in confidence and competence as well as improved attitudes toward writing. Instructors reported similar results as well as improvements in class discussion and engagement and lower rates of writing errors. In addition, we have found that our Peer Writers grew in confidence and competence as writing teachers through their work with struggling writers.

Undergraduate research fellowships provided by Regional Engagement and English Department.

P - 16

Accents influence attachment through focus

Crager

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

Attachment, or linking upcoming words with the current syntactic structure, is a fundamental part of syntactic processing. We know that a prosodic boundary separating a phrase from the nearest attachment site favors high attachment (Carlson et al. 2001; Watson & Gibson 2005). But can accents draw attachment? If so, is it because they highlight material, or because they indicate focus? For example, in “Jimmy comforted the girl that he had insulted after the party,” does accenting the higher verb (comforted) vs. the lower verb (insulted) affect the attachment of the final phrase? Two auditory questionnaires placed a contrastive accent on the higher or lower attachment site in different ambiguous structures, and found that accent position affected the preferred structure. A written questionnaire found that mere heightening of the salience of an attachment site does not have this effect, supporting the idea that the specific semantic consequences of an accent are what matter to attachment. This research was partially supported by NICHD R15HD072713 and NIH 5P20GM103436-13 grants.

P - 17

Ellipsis sentences and levels of structure

Crager

***Emily Holley, Dr. Katy Carlson, Mentor, Department of English, Caudill College of Arts, Humanities, and Social Sciences**

Ellipsis sentences, in which a second clause is missing material recoverable from the first, seem to allow cost-free reuse of structure. Frazier & Clifton (2001) pointed this out for sluicing and VP Ellipsis (VPE) sentences, and Martin & McElree (2008) found similar results. Here, we explored the processing of three ellipsis types with non-finite embedded clauses, such as “Mika wanted to bake muffins, and Leah, cupcakes.” We tested Lechner’s (2004, 2008) claim that the type of ellipsis known as gapping should only allow the higher verb phrase antecedent (“wanted to bake”), while VP ellipsis and object comparatives should be ambiguous between the higher and lower (“bake”) antecedents. A written questionnaire found that gapping and VPE strongly prefer the higher antecedent, while an auditory questionnaire showed that comparatives have a bias toward the lower antecedent. This suggests that the relevant division between ellipsis types should have comparatives on one side, and gapping and VPE on the other. This research was partially supported by NICHD R15HD072713 and NIH 5P20GM103436-13 grants.

P - 18

Where’s the contrast in ‘let-alone’ structures?

Crager

***Megan Ison, Dr. Katy Carlson, Mentor, Department of English, Caudill College of Arts, Humanities, and Social Sciences**

Ellipsis structures with “let alone,” such as “Alexis didn’t even like the shirt, let alone {love it/the outfit},” have been shown by Harris (2013) to have a verb phrase (VP) bias in processing. That is, people generally prefer that the constituent following “let alone” be a VP rather than a noun phrase (NP). This research raises several follow-up questions: do people prefer to contrast with the entire VP, or just with a verb? Can the position of accents affect preferences? And finally, are VP or verb contrasts the most common uses of the “let alone” construction? Two forced-choice completion experiments and two corpus studies found that verb-only contrasts are preferred in processing, that the position of contrastive accents does affect preferences, and that nevertheless, NP contrasts are more frequent structures. This suggests that the information structure of sentences is important, and that without context, people prefer a structure that allows for more possible contrastive situations. This research was partially supported by NICHD R15HD072713 and NIH 5P20GM103436-13 grants.

P - 19

A natural contrast: NP parallelism in comparatives

Crager

***Benjamin Lee, Dr. Katy Carlson, Mentor, Department of English, Caudill College of Arts, Humanities, and Social Sciences**

Contrast between elements requires at least one differing property, but more similar properties: apples and oranges are easier to contrast with each other than apples and filing cabinets (Izutsu 2008; Umbach 2004). In comparative ellipsis sentences, such as “The doctor handed more records to Sam than the nurse,” the final noun phrase (“the nurse”) must be contrasted with a corresponding NP in the preceding complete clause in order to generate the meaning of the whole sentence (Sag 1980). But how do people find the relevant contrast? We argue that this is easier when two potentially contrasting NPs in the sentence are overtly similar to each other. In written and auditory questionnaires varying parallelism between the final NP and the previous subject (“the doctor”) or goal (“Sam”), we found that both syntactic/semantic features and accent position affected the interpretation of the sentences. This suggests that multiple levels of similarity increase the likelihood of two NPs being contrasted with each other. This research was partially supported by NICHD R15HD072713 and NIH 5P20GM103436-13 grants.

P - 20

Finding character in our collections: Investigating library material usage and subject coverage

Crager

***Dakota Trenary, Carter Kozar, 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, two MSU Honors Program students partnered with one librarian at Morehead State University to begin an in-depth, item-level collection assessment of the Library's literature and language collections. The students worked under the direction of the librarian to help collect data and spot trends in our collections. The perspective provided by the students in conjunction with the librarian's knowledge base has proven to be instrumental in discovering the collections' hidden virtues. The following is a poster presentation from the perspective of the students on the discoveries made about our school and library and the secrets that can be gleaned from inside of the books they are home to.

P - 21

The Eugenics movement in America: 1920-1980

Crager

***Chelise Lynn Conn, Dr. Kris DuRocher, Mentor, Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

The eugenics movement, from 1920 until the 1980s sought to “purify” society by sterilizing “unfit” women, often without their knowledge or permission. African American women, women of mixed race, immigrants, and poor and working class white women who conceived too many children became the target of these sterilizations. Many justified these actions with theories of Social Darwinism. This research utilizes various secondary and primary sources, such as newspaper articles, legislation, and lawsuits dealing with compulsory sterilization. As women's societal roles began to change so did the eugenics movement. Thus, the movement offers a reflection of how social attitudes about women of different class, race, and educational backgrounds evolved throughout time and place. This research was supported by an Undergraduate Research Fellowship

P - 22

An examination of Tolstoy's philosophy through his works of fiction

Crager

***Joshua Goble, Dr. Wendell O'Brien, Mentor, Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

This project is an examination of Leo Tolstoy's expression of his philosophical beliefs in his fictional works. By reading Tolstoy's fiction, such as *Father Sergias*, *Hadji Murat*, *The Death of Ivan Ilyich*, and *Anna Karenina*, through a philosophical lens, I intend to outline the metaphysical, epistemological, and ethical theories expressed therein. Furthermore, I will compare the similarities and differences between the particular message expressed in each work and how these messages develop throughout Tolstoy's lifetime. This research is supported by an Undergraduate Research Fellowship through the Honors program.

P - 23

Students' perspectives on service learning through a pro se divorce clinic

Crager

***Brannah Hamilton, Kelly E. Collinsworth, Mentor, Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

Service-learning represents a potentially powerful form of education that provides a means of linking the academic with the practical. The pro se divorce clinic assists low- income divorcing couples in preparing, filing, and finalizing a divorce. This clinic depends on the use of legal studies' students to aid with the completion of the necessary forms. Surveys conducted with present and recently graduated legal students provide a perspective on the impact this opportunity has had on the participating students. The survey questions focused mainly on students' perceptions of the influence of the clinic on their personal identity and learning during their undergraduate education. Graduated legal students have additionally been asked what, if any, impact their service learning experiences had on their preparation for their ascension to their legal careers. This research is supported by an undergraduate engagement fellowship from the Center for Regional Engagement.

P - 24

Cries for democracy: The causes of the 1989 student protests at Tiananmen Square

Crager

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

As General Secretary of the Communist Party in China, Hu Yaobang worked to restore civil liberties. Opposing leadership removed Hu from power, yet after his death supporters, including many students, protested such actions. Feeling ignored by government, the student demand for democracy grew. A May 1989 hunger strike prompted President Yang Shankun to call for martial law and greatly intensified the movement on both sides. An internal struggle between China's people and government threatened to rip the country apart and eventually led to the June 4th Massacre. Yet other sectors of the population did not join the movement and it did not spread outside of Beijing. If the government was so corrupt, then why did other sections of the population not participate more? This research explains why the movement was limited to university students and Beijing and uses a variety of primary sources such as contemporary speeches and memoirs as well as telegraphs among Western embassies. By examining the protest movement from both inside and out one can better understand the motivations of the Chinese people as well as why the movement was doomed to fail. This work has been supported by an Undergraduate (UG) Fellowship.

P - 25

Teaching teachers how to teach trombone

Crager

***Adam Dixon, Dr. Susan Creasap, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

Unlike other brass instruments that have rotary or piston valves, the trombone is unique in that the movement of a slide determines pitch. Because of this, the trombone presents challenges not found in other instruments. Individuals who go into the music education field are required to take courses that teach them how to play each instrument, including the trombone. However, these courses are often brief and do not get into specific instruction on how to overcome challenges that come with playing an instrument. Music educators who are not trombonists may need additional resources on how to teach trombone beyond those covered in the typical brass methods course.

This project will yield an in-depth explanation on how to teach the trombone for non-trombonists. It will also cover topics of interest for music educators including how to assemble and hold the trombone; how to properly maintain the trombone; selecting best maintenance materials; and other pedagogical information. This project was supported by an MSU Undergraduate Research Fellowship.

P - 26

Extended techniques for the flute: A guide for the student flutist

Crager

***Julie Morris, Dr. Jennifer Brimson Cooper, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

This study uses significant resources in flute literature to examine extended techniques for the instrument. Linda L. Holland's series, "Easing Into Extended Technique", and Robert Dick's performance manuals "The Other Flute" and "Tone Development Through Extended Techniques" can be used to study singing and playing, harmonics, pitch bends, finger slides, multiphonics, and microtones. The study focuses on providing an introductory guide to extended techniques, how to practice and teach the techniques to student-learners, as well as assimilate works and composers which employ each technique. Works to be studied include Elizabeth Brown, *Trillium*; Ian Clarke, *The Great Train Race*, and *Within*; R. Murray Schafer, *Concerto for Flute and Orchestra*. The study is designed in mind with the student flutist: to provide a guide to better understand and incorporate extended techniques for the flute. This research was supported by MSU Undergraduate Research Fellowship.

P - 27

The integration of arts and literacy using three modes of learning: Oral, visual, and kinesthetic

Crager

***Joseph T. Rivers, Dr. June M. Grice, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, & Social Sciences**

The Haldeman After School Program provides various arts-based activities, including music, visual art, drama, and foreign language, four days a week to children between the ages of kindergarten and fifth grade. These children come from diverse backgrounds in regards to their family and home life, social abilities, and overall self-esteem. The purpose of this study was to discover if one particular method of learning (oral, visual, or kinesthetic) was more appealing and successful in teaching life lessons through the integration of music and children's literature. This research was supported by the MSU Honors Scholarship.

P - 28

Understanding client 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 resource disparities and aid 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 792 clients who lived in one of the designated Gateway Area counties and filled out the needs assessment survey. 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 45.42 years old. Over half of the population (54.4%) reported an income less than \$10,000 per year. The greatest number participants were female (73.1%) and Caucasian (95.4%). Over one-third (35.2%) of the population were married and a little over one-fourth resided in Morgan County (26.7%). When broken down the most selected needs were emergency services (37.7%). This research was supported by a MSU Undergraduate Research Fellowship and will provide valuable information regarding the services provided by the Gateway Community Action Council and will have implications for providing much needed services to individuals in the region.

P - 29

A study of the different facets of Art Therapy/Art Psychotherapy and their effectiveness

Crager

****Marilyn J. Holmes, Dr. Elizabeth B. Perkins, Mentor, Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences***

Art therapy and art psychotherapy are two growing practices in greater cognitive therapy whose effectiveness has long been reduced to treating children. However, the recent years have found that they can have a broader purpose and serve a larger variety of people. The purpose of this project is to further analyze the multiple facets of art therapy/psychotherapy and their effectiveness in a clinical and creative setting. This project is supported by MSU Undergraduate Research Fellowship.

P - 30

Porn culture in the U.S.

Crager

****Demi Jacques, Dr. Elizabeth B. Perkins, Mentor, Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences***

Pornography is a rapidly evolving sector of the sex industry. As technology changes and pornography becomes more accessible, new levels are pursued by its creators to draw in audiences who seek to push the limit to more extreme content. Pornography affects more than just its traditional consumers, however. The media has become increasingly filled with sexualized content, much of which can easily be considered soft-core pornography. A look into mainstream pornography itself shows common themes which are not only degrading and violent—typically towards women—but also promoting unsafe health standards by which to express sexuality both physically and mentally. As trends in mainstream pornography move to commercials, movies, television and more, these unsafe and unhealthy sexual behaviors are normalized and woven in to everyday life. Implications of such normalization of unhealthy behavior are vast for both men and women; however the topic of pornography is stigmatized by a complex cultural veil and is rarely openly discussed. The discussion must begin for these issues to be addressed. This project is supported by MSU Undergraduate Research Fellowship.

P - 31

Gender in white supremacist ideology

Crager

****Sharon Michelle McIntosh, Dr. Rebecca S. Katz, Mentor, Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences***

Women's participation in white supremacist groups historically and more contemporaneously includes supporting active white supremacist male partners as well as distributing literature and socializing children using racist indoctrination techniques (Blee, 2003; 2008). Other empirical work studying white supremacist ideology illustrates women's back stage roles in these groups and the groups' patriarchal structure. This research conducts a content analysis of the "Kloran, the Original Ku Klux Klan" handbook dating from the early 20th century exploring gendered and racist themes. We compare and contrast this historical literature to more contemporary white supremacist literature on the world-wide web. First we will identify changes in ideology revolving around gender roles within white supremacist literature and secondarily, we will use a grounded theory approach to elucidate a model explaining the developmental links between historical ideology and modern white supremacist doctrine.

P - 32

Discovering identity through art: Working with "at-risk" middle school students

Crager

****Sara S. Brooks, Dr. Jeanne Petsch, Mentor, Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences***

To gain insight about creating relevant curriculum for "at risk" students, research was conducted at the Bluegrass Discovery Academy (Rowan County Alternative School). Ongoing interviews with middle school students took place over a 10-12 week period during the fall 2013 and spring 2014 semesters. These interviews were conducted to explore the life experiences and difficulties these students face, and also, to follow the development of their interests, ideas and perceptions of self through their creative activity. To gain another perspective, ongoing interviews and consultations were conducted with the Bluegrass Discovery Academy Lead Teacher, Mike Kash. Students' artwork and art making experiences were documented photographically throughout each semester. Because artwork is an expression of experience (Dewey, 1934, Art as Experience), the work created by these students can provide additional insights about their lives, their struggles, and their development. A culminating exhibition of student work is also a part of this research project. It was held at the Rowan County School Board Building in April, 2014.

P - 33

Ceramics facility management and kiln maintenance/firing

Crager

****Jeffery P. Couch, Seth J. Green, Mentor, Department of Art and Design, College of Arts, Humanities, and Social Sciences***

Learning various ceramics facility management skills was the basis of this research project. Under the direction of my faculty mentor, Mr. Seth Green, Assistant Professor of Art, I learned and performed the following tasks: mixed studio clays, slips, and glazes; completed raw material inventories and compiled material orders; loaded and fired electric and gas kilns; replaced kiln elements and thermocouples as needed, and other studio related tasks. This Undergraduate Research Fellowship was supported by the George M. Lucky Honors Program at Morehead State University.

P - 34

Traditional music alive in “new Appalachia”

Crager

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

Music has always been a highly valued tradition in the Appalachian region. Centuries of stories have been told through the cry of an old fiddle and the twang of a banjo. However, with the changing music industry over the past 50 years, contemporary technologies offer great opportunities for new music to rise from underground scenes. Today, musicians and those interested in preserving the region’s music are using websites and social media to inform the public about upcoming performances, competitions, and festivals. This web project is working to make information related to Eastern Kentucky music resources more readily available, with postings on regional musicians, instrument shops and repair outlets, dances, and workshops. A listing of performance venues is also being assembled to give broader exposure to groups and small businesses that might not otherwise be able to afford advertising. Living and thriving in “New Appalachia” requires us to adapt and alter our means of communication with each other and with the world outside of our mountains. Efforts on the local level, like the Eastern Kentucky Arts Project, are making headway in keeping the public informed and immersed in Appalachian traditions and heritage. This project was supported by an Undergraduate Research Fellowship.

P - 35

Haldeman Community Center after school art enrichment program

Crager

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

The goals of this project included developing curriculum for an eight-week art program for K-5 and special needs students at the Haldeman Community Center, serving as the lead student-teacher, and creating a photographic/narrative documentary of the program during the Fall 2013 semester. Curriculum emphasized 1) the development of students’ awareness of the world and of self, 2) exposure to a variety of art materials and processes, 3) the creation of inventive and unique art objects. A reflection journal was kept to document students’ experiences, students’ development, and observations made by the researcher. Photographs of students creating artwork and their final projects provided further documentation of students’ expressions of their experiences. Art classes were held on Tuesday afternoons during the first half of the Fall 2013 semester. The program also included a culminating art exhibition, which was curated by the researcher. This research was supported by a MSU Center for Regional Engagement Undergraduate Fellowship.

P - 36

Historic “moonshine” distilling sites in the Daniel Boone National Forest

Crager

****William T. Parker, Dr. Gary A. O’Dell, Mentor, Department of International and Interdisciplinary Studies, Caudill College of Arts, Humanities, and Social Sciences***

Whiskey distillation has a long tradition in Kentucky. Many early settlers brought copper stills into Kentucky and set up their apparatus wherever they established a homestead. Whiskey distillation provided significant value added through conversion of a bulky, low value crop such as corn into a compact, easily transportable and valuable commodity for export. Imposition of nationwide Prohibition promoted widespread illegal distillation in the early 20th century. Small-scale production continued in the form of illegal “moonshine” stills hidden away in remote areas of the state. The only systematic survey of historic illegal still sites was conducted by archaeologists for the Daniel Boone National Forest in association with the USFS Heritage program. Information so gathered was not subjected to analysis until, during 2012-13, the investigator examined all DBNF site reports and was able to identify 107 locations representing former illegal stills. Most sites were located within natural concavities in sandstone cliffs (rock shelters), and many artifacts display axe marks and other indications of intervention by law enforcement. For some sites, historic period of distillation can be determined by associated artifacts. The detailed information on these reports has allowed an analysis of the nature, distribution, and significance of this clandestine Kentucky industry.

P - 37

What do you do when the bathroom sink falls off the wall?

Crager

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

The Haldeman After School Program is a locally funded and staffed organization that provides a safe place for children to come and participate in activities such as music, art, theater, and Spanish, while also getting a little help with their studies and enjoying a nutritious snack.

This poster presentation will discuss some of the struggles the program staff face every day, such as: finding volunteers; making sure there are resources to provide a healthy snack for the day and getting the children to try new foods; and challenges related to the program's location in an aging facility where there is no kitchen, the building is difficult and expensive to heat, and the bathroom sink falls off the wall! The staff never knows how many children will be there each day and there is a wide range of ages. Through finding solutions to these obstacles and many others, the program "happens" and makes a difference in the lives of its children. This project is supported by the Haldeman Community Center, an Undergraduate Research Fellowship, and the Department of Art and Design.

P - 38

The attitudes of pre-service physical education teachers toward teaching individuals with disabilities

Crager

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

In this study, we examined the beliefs and attitudes of physical education majors enrolled in an adapted physical education clinical course. By administering a pre- and post- survey, adapted from Rizzo's 1993 Physical Educators' Attitude Toward Teaching Individuals with Disabilities-III survey, we were able to determine if there was a difference in the beliefs of pre-service physical educators after taking a course and clinical in adapted physical education. Students were asked about including both students with and without disabilities within their inclusive physical education classrooms. The results were surprising, suggesting that many participants' views became more unfavorable towards individuals with disabilities after participating in the course.

P - 39

Using standards-based pre- and post- reading assessments to design targeted instruction in elementary classrooms

Crager

***Annie O'Brien, Dr. Melinda Willis, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education**

Since the adoption of the Kentucky Core Academic Standards teachers and administrators have been seeking a manageable way to monitor the instructional needs of students as well as measure their progress across the school year. Many commonly used mass assessments are not closely aligned with the new standards and, thus, are not able to aid teachers in planning and implementing instruction that meets the needs of their students. In an effort to bridge this gap, assessments were explored to locate ones that were a closer to the content represented by the standards.

After considerable searching and analysis of assessment materials, an adapted version of the *Qualitative Reading Inventory*, 3rd edition, was used to obtain grade level passages for 1st through 5th grades.

Elementary students in a small school district in eastern Kentucky were individually administered the assessments in September. The data analysis can provide classroom teachers with specific information regarding each child's abilities and instruction will be planned and implemented to address students' needs.

End of the year assessments will be administered in May in order to determine the growth of each student as well as examine the instructional factors that might be associated with the growth. This research was supported by MSU Undergraduate Research Fellowship.

P - 40

Impact of energizers on students with behavioral disorders

Crager

****Abigail Abney, *Stephanie Abney,* Brooke Adkins, *Emily Bodenlos, *Mariah Davis, *Keisha Jamison, Dr. Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, Professional Partnership Network, College of Education***

Many teachers use energizers in their classrooms, believing the activity will improve classroom behavior. To answer the question of whether the effect of in-class energizer routines on the behavior of special education positively impacted classroom behavior, research was conducted in K-5 classrooms over the course of several weeks. Comparing on-task behavior before and after energizer routines were incorporated into the classroom routines of K-5 classrooms, the data showed that student age appeared to be a variable. Energizers appeared to have a negative effect on on-task behavior for special education students in K-1. Student behavior in grades 2-5 showed an increase of on-task behavior when energizers were incorporated.

P - 41

Special education and general education co-teaching: Two is better than one

Crager

****Amber Dawn Bradley, Dr. Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, Professional Partnership Network, College of Education***

National data from Tannock and Paulson (2009) shows co-teaching by a general education and special education teacher is effective when utilizing multiple teaching methods. Both tangible and intangible benefits result. Research on student achievement and benefits from co-teaching occurred in a classroom where co-teaching has been implemented for two years by two Kentucky teachers. This case study explores advantages of the co-teaching method and the effects on the classroom including greater levels of classroom mastery of content, more on-task time, and more individualized instruction.

P - 42

Co-teaching in the classroom

Crager

****Katarina Chalk, *McKenzie Clem, *Rachel Heaberlin, *Erin Rummage, *Megan Pennington, *Jessica Taulbee, Dr. Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, Professional Partnership Network, College of Education***

Co-teaching is a strategy that is becoming very popular in elementary classrooms. This research project examined the implementation of the co-teaching strategy in the classroom. Professional Partnership Network students from Morehead State University, who co-teach with mentor teachers, observed and collected data from K-5 elementary classrooms with PPN teachers and classrooms without PPN teachers. Both observational and pre and post assessments data were collected. The results showed that students with PPN teachers in their classroom had more one-on-one interactions with teachers, whereas teachers without a PPN teacher were not able to interact with the students as often.

P - 43

Distance education in law enforcement: Exploring Kentucky's barriers

Crager

+Brandon J. Combs, Dr. Jeannie Justice, Mentor, Department of Foundational and Graduate Studies in Education, College of Education

The topic of education and law enforcement has been heavily debated since the President's Commission on Law Enforcement and Administration of Justice of 1967. Law enforcement officers within the Commonwealth of Kentucky are legally required to complete forty (40) hours of training annually in order to maintain their professional certification. Training is completed at the Department of Criminal Justice Training (DOCJT), the state's training agency, in Richmond, KY. The training provided is traditional classroom instruction, which requires face-to-face interactions between students and instructors.

Distance learning is a growing need in the realm of professional development. The positives, such as less travel, high quality material, and, for some, providing the material via the individual's preferred medium are all evident. This poster presentation will discuss the researcher's capstone project towards a Doctor of Education degree. It will explore and discuss the barriers of implementing distance education in the law enforcement professional training environment.

P - 44

Co-Teaching: Effects on student achievement

Crager

+Stephanie Gebka, Dr. Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, Professional Partnership Network, College of Education

This project analyzes the effect that a MSU student from the Professional Partnership Network (PPN) has on student achievement. The goal of this project is to show the benefits of the PPN program in Rowan County schools. The data for the project was gathered through analyzing students' social studies learning logs. The students are to keep up with their logs through adding to their table of contents, recording the date, title, page number and all notes. This study compared the notebooks of students who have a PPN student working in the classroom and students who do not have a PPN student working in the classroom. The data strongly supports the assertion that students who have a PPN co-teacher in the classroom, obtain higher levels of achievement.

P - 45

TPACK with Web 2.0 tools

Crager

+Amber Hall, Dr. Jeannie Justice, Mentor, Department of Foundational and Graduate Studies in Education, College of Education

The growth of wireless devices and web resources has impacted Kentucky's K-12 classrooms in recent years. 86 percent of Kentucky school districts have adopted digital citizenship curriculum or policies for students and staff (Kentucky District Technology Readiness Report, 2013). The purpose of this capstone is to explore the use of Technological, Pedagogical, and Content Knowledge (TPACK) with Web 2.0 tools by middle school classroom teachers. This study seeks to investigate the influences that may contribute to and restrict the use of Web 2.0 tools for use for middle school teachers in central Kentucky. Additionally, obstacles preventing the use of Web 2.0 tools will be examined, as well as the effect of professional development on Web 2.0 classroom implementation. In order to determine the circumstances that influence (both positive and negative) the use of Web 2.0 tools, three factors will be considered: frequency of use, obstacles, and frequency of professional development. Each of these three factors will be explored for TPACK in central Kentucky schools.

References:

Kentucky Department of Education. (2013). *2013 District Technology Readiness Report Highlights*. Retrieved from: http://applications.education.ky.gov/trs_reports/Reports.aspx

P - 46

Read to lead

Crager

***Allison Huff, Dr. Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary and Special Education, Professional Partnership Network, College of Education**

Reading aloud to students in the classroom has long been an accepted practice. Does reading aloud to students improve their skills?. The research project examines the effect of read-alouds as an effective means to improve fluency and comprehension skills. Working with a small group of fourth grade students, the researcher collected data over three months to determine if using read-alouds was an effective instructional strategy. Students went from being two grade levels behind to achieving grade level in comprehension and fluency.

P - 47

Trends in student perceptions of one-to-one iPad implementation

Crager

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

Last year, 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. This presentation will examine the qualitative data collected both this year and last year. The data points included examine trends in student perceptions from the 1:1 iPad implementation that took place last year, specifically following the changes and similarities in perceptions of sophomores, juniors, and seniors from last year to this year. This research is sponsored by Morehead State University's College of Education through the Undergraduate Research Fellowship Program.

P - 48

Teaching diversity through multicultural folktales

Crager

***Lisa A. Montgomery, Dr. Mee Shon, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education**

Cultural diversity in the classroom prepares students for an increasingly multifarious world. Folktales allow students to learn traditions, values, and beliefs of people that are divergent of their own, resulting in broader understanding, acceptance, and a stronger embrace for diversity. An advanced reading group of 4th and 5th graders from Carter County, KY completed a 6-day diversity unit with three different 'Cinderella' stories: The Korean Cinderella and The Egyptian Cinderella, both by Shirley Climo, and Mufaro's Beautiful Daughters by John Steptoe. The students explored the cultures represented and analyzed their own eastern Kentucky culture for comparison, culminating the unit by creating their own story: The Eastern Kentucky Cinderella. Individual story analysis; small group graphic organizers, narrative writing, and presentations; and whole group discussion were utilized in this cultural investigation. This research project was funded by an Undergraduate Research Fellowship from Morehead State University.

P - 49

Comprehension improvement as a result of sustained silent reading

Crager

***Taylor Nash, Dr. Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, Professional Partnership Network, College of Education**

Sustained Silent Reading (SSR) is considered an effective strategy to increase literacy comprehension. The initial research project was to determine the effect of SSR on student reading achievement. Comprehension skills of students in a classroom composed of twenty-six fourth grade students were examined over two months to determine the effectiveness of SSR. However, the SSR time was soon replaced with a variety of literacy strategies and only haphazard opportunities for SSR arose. At the end of the study, student comprehension decreased. Without effect of not having a sustained literacy strategy in place in the classroom had a negative effect on achievement.

P - 50

Does proximity of post-secondary institution influence college choice?

Crager

+DeAnna L. Proctor, Dr. Jeannie Justice, Mentor, Department of Foundational and Graduate Studies in Education, College of Education

The purpose of this study was to determine whether there was a relationship of proximity (close to home) to choice of a local post-secondary institution versus an out-of-area institution to attend for college-bound high school seniors in south-central Kentucky. One-hundred advanced placement English high school seniors were surveyed and asked to rank their top five factors in choosing a post-secondary institution. Factors consisted of location (close to home), financial aid opportunities, smaller class size, family responsibilities, work responsibilities, quality of instruction, available programs at institution, and need for remediation (low ACT/SAT scores). The results of the study supported the research hypothesis that a higher proportion of college-bound high school seniors in south-central Kentucky will choose to attend a post-secondary local institution due to proximity (close to home).

P - 51

Brain breaks

Crager

***Alexandria Wages-Robinson, *Allison Smith-Blair, Dr. Kimberely Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, Professional Partnership Network, College of Education**

Brain breaks, a term used to describe brief physical activity that occurs during transition times in a classroom setting. Brain breaks promote movement throughout the day, increasing the amount of time students engage in daily physical activity recommended for students. Studies have also shown that the student brain can pay attention for approximately 15 minutes before needing a break (Almarode & Almarode, 2008). A six week research project monitored first and second grade students' classroom attention rates with and without breaks. Analysis of both on and off-task behavior data indicates that breaks are highly effective in promoting student on-task behavior. Allowing students to give their brains a quick rest significantly cuts down on the amount of students were off-task and decreased the amount of behavioral issues.

P - 52

Implementation of a student-centered approach: Impacting school culture and college/career readiness

Crager

+Lewis M. Willian, Dr. Carol Christian, Mentor, Graduate School, Department of Foundational and Graduate Studies in Education, College of Education

The purpose of this capstone project is to document one rural high school's systematic process used to increase student ownership of their learning – specifically with regards to college and career readiness. By examining the research fields of effective schools, student ownership of learning and sustainability, the author identifies five strands common to the research base that were embedded in a school initiative that helped the persistently-low achieving study school in this case study move to the top ten percent in the state in CCR. This study provides strategies used to create and implement a *Student Ownership Initiative* that impacted student achievement and the professional school culture. This study provides educators with a professional development module that includes college and career readiness strategies with a focus on student ownership of learning.

P - 53

D1 receptor activation by amphetamine contributes to symptoms of acute withdrawal in rats

Crager

***Justine Griesenauer, Dr. Wesley White, Mentor, Department of Psychology, College of Science and Technology**

Feeding is reduced 1-6 and 12-24 hours following amphetamine administration in rats. The decrease from 12-24 hours ("long-term") may signify acute withdrawal. The purpose of this study was to explore the role of dopamine D1 and D2 receptor activation in the long-term hypophagia produced by amphetamine. Adult male Wistar rats were individually housed in a 12-12 hour light-dark cycle with free access to water. At a five-day interval, different groups of rats received saline, amphetamine, D1 or D2 antagonist, or amphetamine followed by D1 or D2 antagonist. Antagonists were given either 30 or 120 minutes after amphetamine. Intake of pelleted food was measured 6, 12, and 24 hours after treatments. Intake was reduced 12 to 24 hours following amphetamine, relative to saline control. When amphetamine was followed 30 minutes later by the D1 antagonist, the long-term reduction in intake was smaller. However, amphetamine alone and amphetamine followed 120 minutes later by D1 antagonist produced comparable reductions in long-term intake. D1 antagonist partially blocked the long-term reduction in food intake produced by amphetamine. Furthermore, D1 antagonist lost the ability to block this effect of amphetamine sometime between 30 and 120 minutes following amphetamine treatment. Supported by NIH grant R15DA015351.

P - 54

Twelve weeks of regional engagement with a veterinary technology student, greyhound dogs and youth in a Department of Juvenile Justice Residential Center

Crager

***Amber Hamilton, Dr. Kimberly Peterson, Mentor, Department of Agricultural Sciences, College of Science and Technology and Dr. Martha Decker, Mentor, Department of Early Childhood, Elementary and Special Education, College of Education**

This project is a weekly animal husbandry class taught by a veterinary technology student at the Morehead Youth Development Center with adjudicated females (14-18 years old) as greyhound dog handlers. The youth are initially reticent about participating in the greyhound program and taking on the responsibility for another life. The dog handlers finish the 12 week program with a positive change of attitude, more compassion and respect for their dog and others. A learning goal of this project includes preparing the dog handlers with a job skill. Active participation in the animal husbandry class and enjoyment of learning help the dog handlers retain knowledge and gain deeper understanding of animal care. This program prepares the dog handler with good citizenship for reintroduction into their community. *This project is sponsored by Undergraduate Fellowship through the Center for Regional Engagement.*

P - 55

Photodormancy of annual vinca (*Catharanthus hybrid*) seed during germination

Crager

***Greg Shanley, William Lucas, Dr. Debby Johnson, and Dr. C. Brent Rogers, Mentors, Department of Agricultural Sciences, College of Science and Technology**

For over 25 years germination recommendations for annual vinca, a popular bedding plant, have included conducting germination in darkness. Numerous plant species are photodormant for germination. Some species require red light during germination; others require darkness or far-red light during germination. The original studies resulting in the recommendation were based on older cultivars of *Catharanthus roseus*. Newer commercial cultivars are *Catharanthus hybrida*. The change in species represents genetic changes that resulted in the newer cultivars. However, commercial seeding directions still recommend germination in darkness, typically for 14 days. Poor germination experienced at Morehead State University when following this recommendation led to a study on a current cultivar, *C. hybrida* 'Mediterranean'. Seeds were germinated with treatments of 14, 10, 7, 3, and 0 days darkness. Results indicated the highest percent germination and highest quality seedlings were obtained with 0 days darkness. A follow-up study revealed that fluorescent light (low red light) resulted in greater germination percentage and higher quality seedlings than incandescent light (high red light). Studies are needed that include cultivar trials and number of hours of light received in a 24-hour period. It appears that recommendations may need to be changed to reflect newer cultivars and changes in genetics.

P - 56

Assessment of LEED certified residential projects in Kentucky

Crager

+Stephen Glossner, Dr. Sanjeev Adhikari, and Dr. Hans Chapman, Mentors, Department of Applied Engineering and Technology, College of Science and Technology

The purpose of this thesis was to assess the distribution of LEED certified single-family homes in Kentucky as well as analyze the cost effectiveness of their construction in Kentucky. Breakeven point and payback period for the estimated added construction cost were calculated based on expected resource efficiency of LEED certified single-family homes. Based on these findings the information regarding LEED certified homes in Kentucky is more easily accessible to the public allowing homebuilders and potential homebuyers to be better educated when considering building or buying a LEED certified home in Kentucky.

P - 57

Assessment of the solar energy variability and effects in Eastern Kentucky

Crager

***Zach Schneider, *Andrew Greene, Dr. Hans Chapman, Mentor, Department of Applied Engineering and Technology, College of Science and Technology**

This study was to assess the yearly solar energy availability in the eastern Kentucky region and determine its effects on other atmospheric factors. The methods being employed involve outdoor measurements of solar irradiance. Data from the Kentucky Mesonet Station in Morehead was acquired and analyzed. Previous work investigated the correlation between solar irradiance and atmospheric factors such as ambient temperature and wind speed, for selected months. This study has been expanded to review solar irradiance data for the region over a one-year period and the correlations were re-assessed to account for seasonal variability.

The development of more location-specific solar resources has the potential to increase the level of interest and investments in renewable energy technologies in the region. This study has been possible through MSU internal grant from Office of Research and Sponsored Programs and other support from the Siemens Building Technologies Education Fund.

P - 58

Energy efficiency building in Eastern Kentucky region

Crager

***Robert Spencer, Dr. Sanjeev Adhikari, Mentor, Department of Applied Engineering and Technology, College of Science and Technology**

Different parameters are studied to make building sustainable on energy efficiency and affordable. This research involves green building technology in Eastern Kentucky region. Residential home can construction with renewable energy sources such as wind, hydropower, geothermal and solar energy. Building can also construct with the use of Energy Star appliances, such as refrigerators, stoves, deep freezers. Energy Star appliances help to reduce at least 15-20% energy than a conventional appliance. Green building recycled materials and energy saving such as windows doors and devises can be used. Boone Tavern located in Berea Kentucky is example of Green Building.

New construction method has been implemented to improve insulation. Foam type insulation has been widely popular among the green builders. This insulation can completely seal off a building with the proper ventilation ducts to prevent moisture accumulation is assisting in the reduction of energy consumption. A program that has been started and is currently being implemented across Kentucky is the Green School Initiative. This program, promoted by the Kentucky chapter of the USGBC (U.S. Green Building Council) goal is to have a Green School in each County within the next 20 years.

P - 59

Complexing of Schiff bases with metal ions and other chiral compounds

Crager

***Kyle D. Adkins, Dr. Herbert C. Hedgecock, Mentor, Department of Biology and Chemistry, College of Science and Technology**

The ability of compounds to form complex molecular species is one of the most fundamental and crucial aspects of chemistry. This is illustrated in everything from the iron that is complexed in hemoglobin to the coordination complex formed with platinum to make the cis-platin anti-cancer drugs. The broader implication being that these type of Schiff base metal complexes have been researched and are thought to possess some anti-inflammatory properties, especially certain Schiff bases complexed with zinc which could make them a potential alternative to corticosteroids for reducing inflammation in patients who don't tolerate them well. The research focused on the ability of the Schiff base formed from the reflux of 2'-hydroxyacetophenone and ortho-toluidine, 2-[1-(2-methylphenylimino)ethyl]phenol, to complex with metal ions in the (2+) Oxidation state. The second phase of the research involved reducing the initial imine complex with NaBH₄ and attempting to complex it with various chiral compounds to create a class of compounds known as a Benzoxazines. These compounds are of particular interest because they are thought to possess antimicrobial properties such as bactericidal, fungicidal and antitumor properties.

P - 60

The toxicity of Ivermectin to *Ceriodaphnia dubia*

Crager

***Garrett J. Bredar, Dr. David P. Smith, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Ivermectin is a widely used drug used to treat parasites in livestock. *Ceriodaphnia dubia* are sensitive freshwater invertebrates used routinely in aquatic toxicity testing to indicate potential risk to aquatic ecosystems. Studies indicate that small amounts of this drug if introduced to water sources could potentially cause harm to aquatic organisms. *Ceriodaphnia dubia* in particular are very sensitive to the introduction of Ivermectin into their environment. 72-hour toxicity tests were conducted to determine the concentration of Ivermectin that causes harm to *Ceriodaphnia dubia* and thus potential harm to other aquatic species. Results suggest that if administered incorrectly, Ivermectin introduced to aquatic ecosystems can have lethal results. Careful regulation on the usage and administration of Ivermectin should be used when treating livestock with the anti-parasite drug.

P - 61

Approaches to measuring beetle diversity among three sites

Crager

****Hannah Brough, Amanda Perkins, Dr. Sean T. O'Keefe, Mentor,***
Department of Biology and Chemistry, College of Science and
Technology

Regardless of size, all species have a relative part in enhancing the biodiversity of the ecosystem. Therefore, biodiversity is an important reflection of the magnitude of conservation in a given area. The most diverse group of organisms in the world is insects, specifically beetles, which comprise over 90,000 species in the United States. Diversity is reflected in their abundance, availability, and numerous ecological functions. For the purposes of this study, biodiversity measurements were derived from the Simpson and Shannon indices, Kruskal-Wallis statistical test, and quantitative comparison of functional feeding groups. These methodologies 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 and serves as the control of the study. This study was supported in part by the Undergraduate Research Fellowship program, and in part by the Department of Biology and Chemistry at Morehead State University.

P - 62

Novel organic compounds as possible selective cyclooxygenase inhibitors

Crager

****Michael Blake Cantrell, Dr. Mark T. Blankenbuehler, Mentor,***
Department of Biology and Chemistry, College of Science and
Technology

The primary focus of this research project is the development of novel organic compounds possessing characteristics similar to the celecoxib molecule. Emphasis will be placed on maintaining both structural and functional similarities to celecoxib while seeking to enhance selectivity for the cyclooxygenase-2 (COX-2) isoform via the new molecule. The synthesis of derivatives of 4-(3-phenyl-5,6-dihydrocyclopenta[c]pyrazol-2(4H)-yl)benzenesulfonamides and 4-(3-phenylcyclopenta[c]pyrazol-2(4H)-yl)benzenesulfonamides via condensation of (Z)-2-(hydroxy(phenyl)methylene)cyclopentanones with 4-hydrazinobenzene sulfonamide will be presented. The synthesis of precursor enamines will also be presented. The products are characterized via thin-layer chromatography, Fourier transform infrared spectroscopy, along with proton and carbon-13 nuclear magnetic resonance spectroscopy.

P - 63

Socs2 quantification and cellular localization after spinal cord injury in *Xenopus laevis*

Crager

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

Xenopus laevis tadpoles can regenerate spinal cord axons after complete transection but fail to do so as adults. We have previously found Socs2 messenger RNA (mRNA) expression increased in the tadpole hindbrain (origin of regenerating neurons) after spinal cord injury using microarray analysis. The goal of this study was to more accurately quantify Socs2 mRNA expression using quantitative real-time polymerase chain reaction (qRT-PCR), and identify the cells in the hindbrain that express Socs2 protein using immunofluorescent staining. The results obtained herein demonstrate that Socs2 is indeed upregulated in the tadpole, but decreases in the adult hindbrain after spinal cord injury. Specifically, Socs2 is upregulated in tadpole reticular formation neurons whose axons robustly regenerate after injury. These data may help to further elucidate the underlying cellular mechanisms that promote axon regeneration in the tadpole, but appear to be absent in the adult. This work was funded by National Institute of General Medicine Grant# 5P20GM103436-13.

P - 64

Detection of environmental DNA by water filtration and PCR gene amplification

Crager

****Meredith Eckstein, Marina Kirtland, Dr. David Eisenhour and Dr. David Peyton, Mentors, Department of Biology and Chemistry, College of Science and Technology***

The traditional methodology of surveying aquatic populations of fish and amphibians by capture and morphological identification has been effective for species that have high population densities or characteristics that facilitate capture (diurnal habits, open-water feeding). Alternative techniques are required to survey rare species or those that are intrinsically less amenable to physical capture. Monitoring environmental DNA is one such technique that is non-invasive, does not require a physical specimen, and is sensitive enough to detect organisms present at low quantities. We describe in this poster our pilot study to develop an eDNA detection protocol using a controlled sample (aquarium water) with known species. If successful, we will apply this technique to real populations as a way to determine the range of certain small fish species in the region that have evaded traditional capture.

P - 65

Preliminary comparison of yellow pan traps vs. pitfall traps as an assessment of spider diversity

Crager

****Zachary J. McKinley, Taylor L. Gasser, Dr. Sean T. O'Keefe, Mentor, Department of Biology and Chemistry, College of Science and Technology***

Several methods are available to assess spider diversity. The most common method for catching ground wandering spiders is the use of pitfall traps. Yellow pan traps are a common tool used for trapping invertebrates, specifically wasps and flies. We conducted an extensive review of scientific literature. Apparently yellow pan traps have not been used to assess spider diversity. The goal of this project was to compare species diversity, richness, and evenness in yellow pan traps, a novel method, to pitfall traps, the standard method. Four of 24 paired-sets of samples were compared using the Shannon index, Simpson index, richness indices, evenness, and Kruskal–Wallis non-parametric test. Thirteen genera, representing eight families were found in yellow pan traps while 10 genera representing 8 families were found in pitfall traps. This project was partially supported by Morehead State's Undergraduate Research Fellowship program, and partially by the Department of Biology and Chemistry.

P - 66

Review of sampling techniques to assess spider diversity

Crager

****Taylor L. Gasser, Zachary J. McKinley, Dr. Sean T. O'Keefe, Mentor, Department of Biology and Chemistry, College of Science and Technology***

Spiders are effective tools to assess biodiversity. They are extremely diverse, abundant, occur in many types of habitats, and are relatively easy to sample. Spider diversity is featured in a number of research articles each year. The purpose of this project was to review the literature to examine the most prominent and effective techniques for sampling spiders. In reviewing articles we considered type of habitat sampled (aerial, arboreal, terrestrial, sub-terrestrial), sampling method (pitfall traps, sweep nets, litter searching, bagging, hand collection, and sticky traps), and duration of study. We reviewed over 100 articles. Of these, over 75% employed pitfall traps as a sampling technique. Only a single paper mentioned the use of pan traps. This study was supported in part by the Undergraduate Research Fellowship program, and in part by the Department of Biology and Chemistry at Morehead State University.

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, the frog *Xenopus laevis* can regenerate its spinal cord after injury as a tadpole, but loses this ability as an adult. 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 do so in the adult. 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), we assayed the expression of miR-133b in the hindbrain of tadpoles and adult frogs, after spinal cord injury. Our results show that tadpoles increase miR-133b expression for at least one week after injury, whereas adults show a decreased expression. In situ hybridization revealed that miR-133b expression is neuron specific and expressed by regeneration competent neurons in the hindbrain. These data suggest that the developmental decline in axon regeneration could be mediated by miRNAs, and that restoring specific miRNA expression in adults might improve functional recovery after spinal cord injury.

Research reported in this publication was supported by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number 5P20GM103436-13.

P - 68

**Biodiversity of Lepidoptera in Rowan County, Kentucky, part one:
Papilionidea, Pieridae, and Lycaenidae**

Crager

***Rachel A. Brown, Austin T. Knippenberg, Dr. Sean T. 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 three supplements (2000, 2006, 2008), there are 2493 species of Lepidoptera (butterflies, moths, and skippers) known from Kentucky, with 563 of these occurring in Rowan County. Our project updates Covell's records from Rowan County via new data from the current Lepidoptera collections of MSU, UK, and private collectors. We also provide an overview to each family and each species within the order Lepidoptera. This poster shows the first part of our biodiversity survey and includes an introduction to the superfamily Papilionoidea (butterflies) and a caterpillar-through-adult guide of Rowan County's 5 swallowtails (family Papilionidae), 4 whites and sulphurs (family Pieridae), and 7 harvesters, coppers, hairstreaks, and blues (family Lycaenidae). Information about their host plants, seasonality, sexual dimorphism, and global, USA, and Kentucky biodiversity is also provided. No new county records have been found for these families, but over 200 new county records of moths have been discovered. This project was partially funded by the Department of Biology and Chemistry.

P - 69

Moth and butterfly diversity surveys: Purpose, resources, and methodology

Crager

***Austin T. Knippenberg, Rachel A. Brown, Dr. Sean T. O'Keefe, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Moths and butterflies (Lepidoptera) are a tremendously diverse group of organisms with over 12,400 species in North America and nearly 2,500 species in Kentucky. They feed on a wide range of host plants, which makes them an ideal surrogate for the study of biodiversity. The purpose of this project is to create a base-line county-level inventory of moths and butterflies for Rowan County, because there have been very few extensive lepidopteran surveys in Kentucky. Resources include research and teaching collections (University of Kentucky, Morehead State University), private collections, print resources (checklists, field guides, research monographs), websites (Moth Photographer's Group, Kentucky Lepidopterists Society), and regional experts in the identification of moths and butterflies. Methodology includes collection techniques (black lights, sweep nets, baiting, etc.), preparation techniques (pinning, spreading, labeling, etc.), and identification. This poster serves as an introduction to the purpose, resources, and methodology for this project. Other presentations will encompass the results and discussion of our ongoing lepidopteran survey. Partial funding for this project was provided by the Department of Biology and Chemistry.

P - 70

The use of analytical methods to assess beetle biodiversity in yellow pan vs brown pan traps

Crager

***Bailey L. Lucas, *Haley J. Nichols, Dr. Sean T. O'Keefe, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Numerous analytical methods are used to evaluate biodiversity. Assessing biodiversity is integral for conservation evaluation. Beetles, with over 90,000 species in North America alone, are extremely diverse and fulfill numerous ecological roles. Therefore, beetles are extremely applicable as surrogates to assess biodiversity. For this study we used several metrics to assess the diversity of beetles present in yellow pan versus brown pan traps. Metrics we employed included richness, evenness, diversity indices, functional feeding groups, and statistics. Richness focuses primarily on the different species present. Evenness focuses on the relative abundance of each species. Diversity indices, such as Shannon and Simpson, evaluate both the species richness and abundance. Also, we examined the prevalence of functional feeding groups, e.g. xylophages, predators, herbivores, fungivores, detritovores, necrophages, and scatophages. Lastly, we used the Kruskal-Wallis test to determine statistically significant differences among selected beetle species in yellow pan vs brown pan traps. This project was partially supported by Morehead State's Undergraduate Research Fellowship program, and partially by the Department of Biology and Chemistry.

P - 71

The synthesis and characterization of various salts of $[\text{Au}(\text{SCN})_2]^-$ and analogue of $[\text{Au}(\text{CN})_2]^-$

Crager

***Emily Nickell, Cory Tackett, Dr. Nathan Coker, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Dicyanoaurate (I) ($[\text{Au}(\text{CN})_2]^-$) has been found to be the biotransformation product of pharmaceuticals such as Solganol, Myochrysin, and Auranofin, which are used in the treatment of severe rheumatoid arthritis. $[\text{Au}(\text{CN})_2]^-$, the active compound in the aforementioned drugs, is highly toxic, and therefore cannot often be taken over extended periods of time. Treatment could potentially become more effective if there existed a drug with less toxicity. It is speculated that the toxicity is due to the cyanide group on the gold complexes and that changing the cyanide group to thiocyanate can lessen this toxicity. $[\text{Au}(\text{SCN})_2]^-$ seems to be a reasonable alternative to $[\text{Au}(\text{CN})_2]^-$ because it would allow decreased toxicity while also providing the same anti-arthritic action as $[\text{Au}(\text{CN})_2]^-$. Using Magnesium and Calcium as counter ions, synthesis attempts of $[\text{Au}(\text{SCN})_2]^-$ were conducted.

P - 72

Dendroclimatological comparison of *Tsuga canadensis* and *Liriodendron tulipifera*, Spaws Creek, Menifee and Morgan counties, KY

Crager

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

Dendroclimatological studies investigate the relationship between tree growth and climatic conditions. Previous research with *Tsuga canadensis* tree rings showed that the forest of Spaws Creek was logged in 1908 and 1909. In the present study, the dendroclimatological utility of dominant and co-dominant *Tsuga canadensis* and *Liriodendron tulipifera* was compared. 40 *Liriodendron tulipifera* and 16 *Tsuga canadensis* individuals were assessed from the Spaws Creek area for significant correlations between precipitation, temperature, and Palmer drought severity index patterns and standardized annual ring widths. The results will determine which species is the more accurate climate recorder. This research is supported by the College of Science and Technology and by an Undergraduate Research Fellowship of Morehead State University.

P - 73

Investigation of novel environmental chlorinated pollutants via triple quadrupole mass spectrometry

Crager

***Kathryn Renyer^{1*}, Qian Wang², Paul Chiarelli², ¹Department of Biology and Chemistry, College of Science and Technology, ²Department of Chemistry and Biochemistry, College of Arts and Sciences**

This research is focused on the identification of unknown water pollutants, with high emphasis on those containing chlorine. Water samples were acquired from the Chicago metropolitan area and analysis was performed using a triple quadrupole tandem mass spectrometer interfaced to an HPLC system. Current methods for the determination of water pollutants are based on targeted analysis, or the finding of compounds whose spectroscopic properties are listed in a database. This research is using non-targeted analysis with the goal of finding new pollutants whose properties are not in a database. This is done by the use of precursor ion scans for the determination of molecular masses and retention times of potentially unknown chlorinated pollutants. Product ion scans are then used to determine their primary structural features. This analytical approach of non-targeted analysis is useful in identifying potentially harmful pollutants that may otherwise go undetected. This research was funded in part by the National Science Foundation through the Research Experience for Undergraduates opportunity.

P - 74

Identifying the role of DdrR in the *Acinetobacter baylyi* DNA damage response

Crager

***Travis A. Witkowski, Alison N. Grice, Dr. Janelle M. Hare, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Acinetobacter baylyi undergoes a dramatic change in gene expression after DNA-damage. This bacterium, however, does not contain the LexA repressor identified in *Escherichia coli* as the regulator of SOS mutagenesis genes. Previous studies demonstrated that the error prone polymerase subunit UmuDAb binds like a repressor to the promoters of the genes *umuDAb* and *ddrR*, suggesting that it may play a regulatory role much like LexA. In *A. baylyi*, in addition to the regulatory role of UmuDAb, there are three additional regulons of DNA damage-induced genes: those regulated by RecA, both UmuDAb and RecA, and neither RecA or UmuDAb. *ddrR* is a gene of unknown function that is induced after DNA damage and regulated by UmuDAb. We used real time qualitative PCR experiments to compare the wild-type *A. baylyi* strain to a *ddrR* mutant strain to test the hypothesis that *ddrR* has a role in the regulation of the DNA-damage induced genes. This RT-qPCR data was gathered from induced genes regulated by UmuDAb, RecA, both UmuDAb and RecA, or neither RecA nor UmuDAb to see how or if DdrR is involved in regulating the expression of these four regulons. This work was supported by an URF, NIH grants P20GM103436 and R15GM085722-02.

P - 75

Examining microbial diversity in a Paleocene Wilcox Group Coal from Texas

Crager

***Sharon J. Brooke, Dr. Jen O'Keefe, Mentor, Department of Earth and Space Science, College of Science and Technology; Michelle N. Johnston, Mentor, University of Kentucky Center for Applied Energy Research**

The distribution & ecological niches of fungi in Wilcox Group coals are poorly understood. Organic petrography & palynology are used in tandem to define the relative distribution and types of fungi contained in the coals and associated sediments. Saprophytic, parasitic, and mutualistic fungi are all present, as are abundant hyphae. When the dominant taxa are excluded from statistical analyses, four groupings can be made: 1) samples containing high-diversity, low-abundance fungal forms; 2) very low diversity, low-abundance assemblages; 3) assemblages that are enriched in *Dicellaesporites*; and 4) assemblages that contain *Lacrimasporites*. Within groups 1 and 4, all of the samples that come from the tops of the coal seams contain small forms of *Fusiformisporites* that are morphologically identical to *Atrorotquata lineata*, known to occur only as a saprophyte on *Juncus* stands. Thus, groups 1 and 4 represent different aspects of high salt-marsh environments. These groups are also the most densinite enriched, indicating significant aerial exposure of the peat prior to incorporation in the mire. Our results support those of O'Keefe et al. (2005), indicating increased peat decomposition up-section within the coals coupled with a transition from freshwater swamp to brackish-water impacted marsh environments. This project was supported by KY NSF EPSCoR.

P - 76

A Chandra observation of the Galactic mixed-morphology supernova remnant W44

Crager

***Aaron Lackey-Stewart, Dr. Thomas G. Pannuti, Mentor, Department of Earth and Space Science, College of Science and Technology**

An X-ray spectral analysis conducted using data collected by a pointed observation made by the *Chandra X-ray Observatory* (CXO) of the Galactic supernova remnant W44 has revealed the characteristic thermal component typical of supernova remnants (SNRs). W44 is a Mixed-Morphology Supernova Remnant (MMSNR): it features a centrally concentrated (rather than shell-like) X-ray morphology. We present our findings regarding the spectral characteristics of W44: we find the spectral properties of the X-ray emission from W44 to be quite complex. For example, the location of W44 within the Milky Way lies along the Galactic Ridge, which contributes diffuse X-ray emission that is not associated with the remnant. Using the *Chandra* data we extracted spectra from 18 regions within W44 to model the hot diffuse gas and determine the relative elemental abundances (such as oxygen and iron) as well as the temperature of the gas. Lastly we comment on W44's interaction with surrounding molecular clouds – as evidenced by the detection of maser emission by hydroxyl (OH) at 1720 MHz from shocked molecular gas -- and provide a spectral analysis of W44's associated pulsar PSR B1853+01. This research is supported by a grant from the Kentucky Space Grants Consortium.

P - 77

An observer's manual for the operation of the Morehead State University's 21-meter Space Tracking Antenna

Crager

***Shelby R. Price, Dr. Thomas G. Pannuti, Mentor, Department of Earth and Space Science, College of Science and Technology**

The Department of Earth and Space Science at Morehead State University operates and maintains the 21-meter Space Tracking Antenna (STA), a medium-sized radio telescope used to make observations of different types of astronomical sources, including blazars, supernova remnants, and HII regions. The antenna has interchangeable "feeds" that allow it to observe at different frequencies; some of the feeds available include L-Band (1.4-1.7 GHz), X-Band (5.2-10.9 GHz), and Ku-Band (11.2-12.7 GHz). Examples of emission processes that can be observed by the antenna are synchrotron radiation and thermal bremsstrahlung radiation. We are developing an observer's manual to help observers currently training to be antenna operators. The manual will have two versions: the first version describes how observations are made at the STA and the second describes how observations are conducted from the control room of the Space Science Center. This work has been supported by an Undergraduate Research Fellowship and a grant from the Kentucky Space Grant Consortium.

P - 78

Development of a linux-based computer of astrophysical research

Crager

****Scott Blankenship, Dr. Jennifer J. Birriel, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science & Technology***

Reduction and measurement of astrophysical data requires sophisticated, Linux-or Unix-based software. Here we describe the process of installing the Image Reduction and Analysis Facility (IRAF) package developed and distributed by the National Optical Astronomical Observatories. We installed the Linux version of IRAF on an UBUNTU operating system. A second identical laptop is prepared by cloning the first. The system was also tested using real astronomical data to ensure proper installation.

P - 79

A threshold approach to predict small business failures

Crager

****Jessica Ann Brashears, Dr. Kathryn M. Lewis, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

The average failure rate for small business is that half will fail in their first year and over half of the remainder will fail in their second year. Less than 20% will succeed in their business after start up. Through research, the leading cause for failure in small businesses was found to be the lack of managerial experience. In the past, several formulas were formed to predict business failures in the financial area, but due to the continuously changing economy and the lack of updates done to the formulas, they failed. An example of this was the Gaussian Copula. This project involves developing a more accurate formula by making alterations to these equations to accommodate the managerial expertise, instead of the financial aspect. By running test scenarios with data collected from the Small Business Development Center in Rowan Co., this would help businesses target whether or not they are failing.

P - 80

Square time

Crager

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

Mathematical games are often a good way to introduce or reinforce mathematical concepts. Square Time is a Mathematical game that involves adding or subtracting perfect squares to reach a target number. Two opponents alternate turns and the first one to the target number is the winner. This game is a good teaching aid for those that are trying to learn perfect squares and want to quicken their addition and subtraction speeds. In this presentation I will address how the game was developed and some of the strategies that can be used to improve and/or guarantee an opponent's chances of winning.

P - 81

Predicting sales of magic: The gathering cards using color and data mining

Crager

****Kevon Z. Jackson, Dr. Sherif S. Rashad, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

The project intends to find a relationship between color and sales records in cards of Wizards of the Coast's (WotC) trading card game: Magic: the Gathering (MTG). Interest in both the material studied and the field of data mining resulted in this pursuit. The card images and card information (name, mana color, etc.) were gathered from various MTG website databases using a C# web scraping library, HtmlAgilityPack. The image color attributes were obtained through the .NET wrapper of the OpenCV image processing library: EmguCV. The compiled dataset is ran through the project's implementation of the C4.5 decision tree algorithm. New cards will be ran through the decision tree to be classified into nominal classes. The hypothesized results would be that color does impact sales records in MTG cards. Further, if real sales record data can be obtained, the results should be more accurate. The results of the project would prove useful to WotC or MTG players as a tool to help predict the value of their cards.

P - 82

Horsing around

Crager

****Amber Kirchner, Dr. Timothy O'Brien, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

There has never been any mathematical equation published for the optimal path of barrel racing with horses. I will be using calculus of variation to find the optimal path for barrel racing. With this, I will be able to prove that if the path most riders have come up with over the years due to observation, if it is the optimal path for barrel racing. The equation will depend on the horses speed and it will tell us how far the rider will need to keep the horse away from the barrels while trying to finish the pattern with the fastest time.

P - 83

User trajectory mining in the mobile computing environment

Crager

****Zachary W. Lamb, Dr. Sherif S. Rashad, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

As the value of useful information rises and the mobile computing environment continually expands, the need for more efficient ways of extracting information is necessary. To tackle the problem we first develop efficient ways of collecting and mining data on the device itself. This approach also solves some of the security concerns that arise when companies collect users personal information. By eliminating the need for personal information to be sent to servers, our technique provides a safer way for companies to leverage their users information. This platform allows the users devices to provide all computing resources, thus removing the need for a company to purchase specialized hardware. To demonstrate the efficiency of the technique, use a current rule-mining algorithm to analyze the relationships between the locations a user visits. In addition to efficient computing, modern smartphones offer the capability to collect numerous types of data. Early testing shows that smartphones are capable of performing the tasks of data mining and provide accurate results.

P - 84

Composition of solutions for the n+k Queens separation problem

Crager

****Michael S. McGinnis, Biswas Sharma, Dr. Robin Blankenship and Dr. Doug Chatham, Mentors, Department of Mathematics, Computer Science and Physics, College of Science and Technology***

The n+k Queens Problem requires the placing of n+k Queens and k Pawns on an n x n chessboard in such a way that no two Queens attack each other. It has been proven that the problem has a solution when $n > \max\{87+k, 25k\}$. We attempt to obtain nice patterns and lower this bound on n by composing solutions and partial solutions for smaller values of n to obtain solutions for larger values of n. Our recent approach in this regard has been to create a program using JavaScript in order to efficiently solve any size board with any number of pawns.

P - 85

Beam monitor prototype using gas discharge

Crager

****Trevor Satterfield, Dr. Jennifer Birriel and Dr. Manoel Couder, Mentors, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Nuclear astrophysicists study nuclear reactions to understand the energy production and nucleosynthesis in stars. Since Astrophysicists cannot directly measure the cross section of the atomic interaction in stars, experiments involving particle accelerators have to be used. Those reactions take place in stars at relatively low energy where the cross section is very small. In the laboratory, high intensity beam are required to measure those small cross sections. The high intensity beam may melt solid material in the interaction. In this work we focus on finding an alternative to the standard slits in order to evaluate the size and profile of the beam.

P - 86

Use of CAM therapies among college students: Is there a relation with science attitudes?

Crager

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

Dietary supplements are products that contain a vitamin, mineral, herb, botanical, amino acid, or other substances. These products are very popular, despite being marketed using health claims that do not have to be approved or safety-tested by the United States Food and Drug Administration. Although there has been studies conducted regarding the use of dietary supplements at the national level, there is little research regarding their use among young adults, especially in rural Appalachia. This study aims at addressing this gap in the literature by: (a) determining to what extent college students in Eastern Kentucky use dietary supplements, (b) quantifying what is the participants' overall attitude toward science, and (c) measuring whether there is a correlation between these variables. Since the claims made by supplement companies are not supported by science, it is hypothesized that the better the participants' perceptions toward science, the less frequently should be the use of supplements. This study was supported by Morehead State University's Undergraduate Research Fellowship Program and the Department of Mathematics, Computer Science, and Physics.

P - 87

Exploration of current practice and the rise of antimicrobial resistant infections

Crager

****Megan Anderson, *Andrea Benjamin, *Marsheena Brock, *Katie Burroughs, *Charlene Helton, *Cassandra Royse, Michelle McClave, Mentor, Introduction to Nursing Research, Department of Nursing, College of Science and Technology***

The amount of patients contracting multidrug resistant infections is increasing at an alarming rate. This is leading to a rise in poor patient outcomes including longer hospital stays, lasting residual effects, and increased mortality rates. The purpose of this project is to explore hospital procedures currently in place to prevent the spread of these infections and to gain insight into the practices leading to their etiology. The purpose was guided by The Joint Commission's National Patient Safety Goal 07.03.01 that aims to decrease the amount of preventable healthcare problems and improve the quality of healthcare. Upon investigating relevant research, it was evident that emphasis is being placed upon better infection control policies and procedures and the proper use of antimicrobials. While these ideas have been proven effective at preventing the creation and spread of antimicrobial resistant organisms, the recommendations in the literature are not common practice in today's hospital settings. We plan to investigate current practices being implemented in a local hospital and compare these practices with the suggestions presented in current research.

P - 88

Improvement of compliance with infection control to reduce hospital-acquired infections

Crager

****Sara Hardin; *Ashley Wireman; *Jennifer Adkins; *Audreanna Howard; *Brittany Tackett; *Ashley Duvall; Michelle McClave, Mentor, Introduction to Nursing Research, Department of Nursing, College of Science and Technology***

Millions of people every year acquire infections while receiving inpatient care at hospitals throughout the United States. These infections can increase hospital length of stay, delay healing, alter functioning and quality of life, and even lead to death. As a way to combat this devastating problem in health care, The Joint Commission has designated one of their 2014 National Patient Safety Goals to focus on the improvement of compliance with the current Centers for Disease Control and Prevention (CDC) and World Health Organization (WHO) hand hygiene guidelines. In recent research we have found that these guidelines are not always followed in the clinical setting, despite health care providers' knowledge of their importance in preventing hospital-acquired infections. It is our goal to apply these guidelines to the day-to-day activities that occur within our regional hospitals as we hope to accomplish increased compliance and to inform our audience of these procedures that guide infection control.

P - 89

Interventions to prevent misidentification of patients during blood transfusions

Crager

****Jared Hutchinson, *Daniel Souders, *Ethan Virgin, *Tahler Peveto, *Katherine Payne, *Abigail Daniel, Michelle McClave, Mentor, Introduction to Nursing Research, Department of Nursing, College of Science and Technology***

Blood transfusions are a critical element in health care every day. Transfusions administered to the wrong patient can cause severe adverse effects and even death. The Joint Commission has emphasized the importance of making certain that the correct patient gets the correct blood transfusion. The estimated risk of an incorrect transfusion is approximately 1 per 10,000 units of blood. Previous research has suggested faults and successes in the method of proper transfusion. The most common cause of wrong transfusions is patient misidentification at the bedside. Patient misidentification accounts for over 70 percent of incorrect blood transfusions. The introduction of the bar-code matching system between a patient's wristband and the blood bag was introduced in 2003 and has been very beneficial in preventing errors at the bedside, but misidentification still exists. As nursing students in the clinical setting, we have observed patient misidentifications due to issues with technology and interruptions, as well as the adverse effects related to these. We aim to propose interventions to help reduce errors related to transfusion misidentification in our clinical settings.

P - 90

Anticoagulation safety: Reducing the likelihood of complications associated with anticoagulation therapy in the clinical setting

Crager

****Kelli Ratliff, *Mallory Rice, *Kiersten Thomas, *Katlin Shepherd, *Emilie Overby, *Laura Price, Michelle McClave, Mentor, Introduction to Nursing Research, Department of Nursing, College of Science and Technology***

The number of dispensed outpatient prescriptions for the anticoagulant warfarin increased by almost 7 million in the last 15 years. With many of these patients, initiation of anticoagulant therapy begins in the hospital setting and is being continued after discharge. Given this large number of patients who are prescribed anticoagulants, the importance of safe anticoagulant therapy is a priority in the clinical and outpatient setting. The purpose of this study is to collect data regarding anticoagulant policies in the clinical setting, investigate the actual application of the policies in practice, and suggest possible improvements to patient outcomes related to these instances. Patients who are taking anticoagulant medications are subject to unfavorable outcomes if the correct and ample education of risk factors and safety is not provided by health care professionals upon initiation of the therapy. A combination of compliance with facility policy and patient participation can promote overall positive effects on patient health.

P - 91

Interventions for the prevention of post-operative infections

Crager

****Rebekah Smith, Becky Nipper, Carla Ferguson, Lindsay Malone, Kayla Gooding, Monica Turner, Michelle McClave, Mentor, Introduction to Nursing Research, Department of Nursing, College of Science and Technology***

Post-operative infections, also known as surgical site infections (SSIs), along with other preventable complications, accounted for 32,000 deaths a year in 2010. The purpose of this project is to increase awareness in health care facilities and identify preventive factors of SSIs such as: proper hand hygiene, patient-centered nutritional needs, ambulation, wound care management, prophylactic antibiotics, and early identification of surgical site infections. A literature review of current research was conducted to identify contributing factors related to SSIs. An analysis was then performed to determine ways to reduce SSIs based on The Joint Commission's current National Patient Safety Goal related to implementation of evidence-based practice for preventing SSIs. Based on our research and clinical site assessment, recommendations are being suggested to aid in the reduction of SSIs in a variety of medical-surgical settings.

P - 92

**The importance of nursing competencies in CAUTI prevention:
Investigation of compliance with best practices**

Crager

***Hali Whitt, *Jayme Farris, *Melanie Posey, *Alyssa Hahn, *David Bickett, *Megan Perkins, Michelle McClave, MSN, RN, Mentor, Introduction to Nursing Research, Department of Nursing, College of Science and Technology**

According to the CDC, more than 13,000 deaths are associated with urinary tract infections annually, the majority of which are connected to invasive procedures to the urinary tract. The purpose of this project is to identify protocols and guidelines that can be implemented to decrease the incidence of catheter-associated urinary tract infections (CAUTI) in our current clinical facilities. Suggestions for improvement will be provided following review of applicable research, including recommendations to improve interventions such as: aseptic catheter placement, a decreased duration of catheter use, and correct care and frequent assessment of current urinary catheters. The outcomes of patients who experience CAUTI can be directly impacted by the care received by nursing staff. This indicates the importance of continued nursing competence in CAUTI prevention.

P - 93

Scopolamine effects on stress-induced behavior

Crager

***Zachary Abbott, Josh Holbrook, Adam Roe, Chelsea Nolan, Dr. Ilsun M. White, Mentor, Department of Psychology, College of Science and Technology**

Scopolamine, a muscarinic receptor antagonist, disrupts learning and memory. Excessive stress hormone, cortisol, is thought to impair memory, via disruption of hippocampal function. The present study examined the effects of scopolamine on stress-induced behavioral changes. Male Wistar rats were shaped to lever-press to receive a food pellet, and they were trained on a fixed ratio 5 (FR5) until they reached behavioral criteria. One group of rats was injected with either scopolamine or saline and was tested on FR5. Another group was exposed to the same conditions, and was placed in the restraint (stress) for a 30-min period. Performance on FR5 was measured by the latency of the first lever-press, runtime, and food-retrieval. Scopolamine increased the response latencies, compared to saline control. Stress increased the response latencies. Food retrieval and consumption were not affected in either condition. Our data support the notion that both scopolamine and stress disrupt learning and memory. Currently we are examining interaction between scopolamine and stress on FR5. Zachary Abbott is a recipient of an UG Fellowship. Supported by NIH grant: R15DA015351.

P - 94

Perceiving changes in the velocity, acceleration, and direction of a moving object

Crager

***Kendra Combs, Cierra Hensley, Zoe Becerra, Chelsea Witt, Dr. Gregory Corso, Mentor, Department of Psychology, College of Science and Technology**

The ability to perceive motion is critical to our survival. Our ability to navigate the world, play, and work depend on our ability to identify changes in the characteristics of objects that are moving around us. This study was designed to assess how well people can identify changes in the dynamic characteristics of a moving object. Participants viewed a series of videos in which a circle, moved across a computer screen. Velocity, acceleration, or direction of the circle were manipulated. A black bar occluded part of the path taken by the circle. The width of the bar varied. When the circle was "behind" the black bar the direction, velocity, or acceleration on one-half of the trials was altered, on the other half of the trials no changes in the flight characteristics occurred. The participants were prompted to indicate whether a change in the flight characteristics (velocity, acceleration, or direction) of the ball occurred. Both response time and accuracy measures were recorded. As would be expected, there is a threshold for detecting these types of changes. Moreover, participants tended to base some of their judgments on changes in the flight characteristics interacting with physical forces outside of the experiment.

P - 95

Preschool attachment and parent-adolescent dyadic conflict resolution strategies

Crager

***Michelle S. Deaton, *Morgan D. Blevins, *Ashley N. Hamm, Dr. Shari L. Kidwell, Mentor, Department of Psychology, College of Science and Technology**

Although there is considerable research showing attachment is important in childhood, there is far less evidence concerning adolescence. A central problem is that there is no widely-accepted measure of adolescent attachment. The present study hypothesized that children's preschool-aged attachment would be related to their parent-adolescent dyadic conflict resolution strategies. Fifty-four families first participated when the children were four years of age, completing Ainsworth's Strange-Situation procedure (1978), coded using Crittenden's (2004) manual. Twenty-one families completed a revealed differences task at an age 12 visit. In this 10-minute task parents and adolescents were instructed to discuss a topic of disagreement, which was coded according to published guidelines (Lyons-Ruth, Henninghausen, & Holmes, 2005). Preliminary analyses show the expected connection between children's attachment at age 4 and their dyadic parent-child conflict resolution pattern at age 12. This suggests that the revealed differences task may serve as a useful index of attachment in adolescence. This research was supported by MSU's Undergraduate Fellowship and Graduate Assistantship Programs, as well as MSU RCPC and KY NSF grants.

P - 96

Effects of dopamine D1 antagonist on 24-hour food intake following amphetamine and morphine in rats

Crager

***Daniel Elmlinger, Laura Secord, Dr. Wesley White, Mentor, Department of Psychology, College of Science and Technology**

Amphetamine decreases food intake 12-24 hours after administration. Administration of a dopamine D1 antagonist can block this indicator of amphetamine withdrawal. The purpose of this study was to see if similar phenomena were seen after morphine administration. Male Wistar rats were housed in individual cages on a 12-12 hour light-dark cycle. Animals were divided into six treatment groups. Each group received two treatments separated by a 30-minute interval. Treatment combinations included saline, amphetamine, or morphine followed by saline or D1 antagonist. Food intake was measured 6, 12, and 24 hours after the first administration. The capacity of amphetamine and morphine to reduce intake sometime between 12 and 24 hours after administration, and the capacity of D1 antagonist to reverse this reduction, were assessed. Supported by NIH grant R15DA015351.

P - 97

Sex differences in physical and psychological symptoms after betrayal

Crager

***Shelbi D. Hall, Alexa Koeninger, Dr. Laurie L. Couch, Mentor, Department of Psychology, College of Science and Technology**

Physical and psychological symptoms that 123 victims (45% males/55% females) in a community sample recalled suffering soon after betrayal were measured through a survey. Two multivariate analysis (MANOVAs) – one using physical symptoms as the dependent variables and one using psychological symptoms as the dependent variables -- were conducted to determine whether recalled symptoms varied by sex. Results revealed that among physical symptoms, women recalled greater nausea, muscle tension, unplanned weight loss/gain, sleeping all the time (or wanting to), loss of energy, and trembling/shaking than men. Among psychological symptoms, women recalled experiencing more anxiety and stress, lowered self-esteem, mentally reliving the betrayal, focusing on symbols of the betrayal (e.g., dates, colors, locations, etc.), feeling in a daze and fearful or rejection, being agitated or keyed up/on edge, pessimism and hopelessness, inappropriate guilt, inability to think/concentrate or find anything pleasurable, a disinterest in daily activities, and thoughts of death/suicide than men.

P - 98

Improving performance on a vigilance task

Crager

***Cierra Hensley, Kendra Combs, Zoe Becerra, Chelsea Witt, Dr. Gregory Corso, Mentor, Department of Psychology, College of Science and Technology**

We are investigating whether the introduction of visual and/or tactile alerting stimuli changes attentional performance. Participants saw a circular arrangement of 24 equally spaced locations. A red dot jumped from one location to the next location every second. Occasionally, an abnormal jump would occur; the red dot jumped two locations. The task of the participant was to indicate when the abnormal jump occurred by hitting the space bar. Over time this task becomes very boring and after about 20 minutes, performance deteriorates, very analogous to driving an automobile on a long stretch of interstate highway. Each participant underwent two different stimulus scenarios. For one scenario, participants identified the jump but this time the jump was preceded by one of the following alerting stimuli; a visual stimulus, a tactile stimulus, or both a visual and a tactile stimulus. Additionally, for some trials, the alerting stimuli occurred but the abnormal jump did not. The onset of a stimulus before the abnormal jump should improve performance. Moreover, the tactual alert should result in better performance than the visual alert. The results are discussed in terms of latency and accuracy.

P - 99

2014 Brain Drawing Contest: Regional brain awareness program

Crager

+Jenna L. Huff, Zachary Abbott, Daniel Elmlinger, Corey Banks, Allan Baldwin, Daniel Edie, Casey Fitzpatrick, Caitlin Hall, Brittani Price, Ali Rich, Amber Sexton, Megan Smith, Erin Waddell, Richard Ward, Justin Barber, Dr. Ilsun M. White, Mentor, Department of Psychology, College of Science and Technology

The annual Brain Drawing Contest is a part of the Regional Brain Awareness Program. The scope is to enhance brain awareness among students (K-12th) and our community in eastern Kentucky. Drawing themes were specific to grade. K-1st graders explained how their brain helps them; 2nd-4th graders focused on how their brain is special; 5th-6th graders focused on brain health; 7th-8th graders used similes and compared the brain to an object. This year, nearly over 800 entries were received. Judging was based on originality, scientific accuracy, and overall design. Preliminary judging was done by 15 student judges. Award judging was done by 8 faculty members and a community representative. The award ceremony was held in Reed Hall 419. The Dean of the College of Science & Technology presented awards to the students.

P - 100

The green-eyed monster: Jealousy's link to relational self-efficacy and emotional intelligence

Crager

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

Links between jealousy and beliefs about one's level of relational skill were assessed through an online survey of 244 college females in romantic relationships. Based on previous literature, it was hypothesized those high in jealousy would be less relationally skilled as compared to those low in jealousy. To test this, first a MANOVA was conducted comparing high vs. moderate vs. low jealousy groups on three types of relational self-efficacy: mutuality (i.e., being a couple), differentiation (i.e., being an individual in the relationship), and emotional control. Results revealed that those low in jealousy believed they were better at emotional control and being an individual/letting the partner be an individual within their relationship. Next, an ANOVA compared the jealousy groups on emotional intelligence, and results showed that those low in jealousy were more emotionally intelligent than those with high jealousy. These results will be discussed in terms of implications for relationship counseling.

P - 101

Ethnic bias in helping behavior: A real-world examination utilizing the lost e-mail technique

Crager

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

Prior research has established racial biases in prosocial behavior such that racial minority group members are helped less than majority group members. In the current study we expanded upon this work by conducting a real-world examination of ethnic bias in helping behavior. Ethnic bias was tested using The Lost E-mail technique in which helping behavior was measured by rate of return of a seemingly urgent e-mail detailing the status of a scholarship application. Participants ($N = 76$) completed pretesting materials to assess their prejudice toward Hispanics before receiving a "lost e-mail" requiring a response within seven days. The name of the intended recipient implied that he/she was either of Hispanic or Caucasian origin. Although not statistically significant, the pattern of results was consistent with an ethnic bias in helping behavior, reflected in a higher rate of return of negative e-mails and fewer positive e-mails to Hispanic recipients compared to Caucasian recipients. This pattern was particularly evident among individuals with relatively high levels of prejudice toward Hispanics. Findings will be discussed in terms of their implications for using field-based methods to assess ethnic bias in helping behavior. This research was supported by a MSU Undergraduate Research Fellowship.

P - 102

Parental reflective functioning and its association with sensitivity and warmth in parent child interaction tasks

Crager

***Ashley N. Morris, *Leah Katz, Kayla Sizemore, Katelyn Fugate, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science and Technology**

Parents' reflective functioning has become a focus of parenting interventions; however, its connection with parenting behavior has not been well-established. Reflective functioning (RF) involves understanding one's own and other's behavior in terms of underlying mental states (Fonagy, 1998). The present study hypothesized that parent's RF would be related to their sensitivity and warmth while interacting with their children. Forty-two families first participated when the children were four, with 35 returning when children were six and 21 at age 12. An origami boat-folding task (Siegel, 1987) was conducted at age 4, in which parents were to teach their child. Warmth was then rated on a 4-point scale. Sensitivity was assessed at age 6 years via ratings of a task in which parents discussed their children's recent "good" and "bad" behavior with them. RF was assessed when parents returned with their children at age 12. Specifically, it was rated on a 9-point scale developed by Fonagy (1998) that utilizes the Adult Attachment Interview [AAI: George Kaplan, & Main, 1985, modified by Crittenden & Landini, 2011]. Analyses revealed the expected connections between parent's RF and their warmth and sensitivity with their children. These findings support the targeting of RF in parent-child interventions. This research was supported by MSU's Undergraduate Fellowship and Graduate Assistantship Programs, and MSU RCPC and KY NSF grants.

P - 103

Depression as a negative predictor of parenting sensitivity: A seven year follow-up

Crager

+Kayla D. Nichelson, Glenn T. Harris, Evan S. Rollins, Kayla M. Sizemore, Dandan Li, Dr. Shari L. Kidwell, Mentor, Department of Psychology, College of Science and Technology

This study examined parent's depression in association with parenting sensitivity among 54 families living in Appalachia at three time points. Depression was assessed by the CES-Depression Scale (Radloff, 1977) at each time. Warmth was measured via coding parents' behavior with their 4-year olds, during a game and a teaching task. When children were 6, parenting sensitivity was measured through coding parents' discussion of 'bad' and 'good' behavior with their child. At age 12, parental criticism was assessed with a five-minute speech sample. The Caregiving Helplessness Questionnaire (George & Solomon, 2008) was also administered. Correlations did not reveal the expected associations between parents' depression and their parenting at age 4; however, depression was significantly associated with sensitivity at age 6 and criticism and perceived helplessness as a caregiver when children were 12. These results are consistent with the literature in that depression is linked to less sensitive and more negative caregiving. This research was supported by MSU's Undergraduate Fellowship and Graduate Assistantship Programs, as well as MSU RCPC and KY NSF grants.

P - 104

Prejudice in C-major: Pro-Christian biases in music evaluation

Crager

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

The current study expands upon recent work on pro-Christian biases by examining the implications of such biases in the context of music perception. Participants ($N = 68$) completed a measure of attitudes towards Christian and non-Christian groups and then listened to music by three ostensible student composers, one of which was described as either Christian or atheist. They rated the music and recommended funding for each composer. Consistent with the pro-Christian bias, participants were significantly more likely to recommend funding for the Christian compared to atheist composer. This pattern occurred regardless of participants' religious identification or attitudes towards Christians and non-Christian groups. Participants' perception of the Christian versus atheist compositions did not differ, indicating a difference only in willingness to help these perceived groups. The findings are discussed in terms of furthering research on pro-Christian biases and developing a deeper understanding of how pro-Christian biases may impact American society and media. This research was supported by a MSU Undergraduate Research Fellowship.

P - 105

Connections between parental depression and child attachment during preschool and adolescence

Crager

+Evan S. Rollins, +Glenn T. Harris, Kayla D. Nichelson, Katelyn M. Fugate, Dr. Shari L. Kidwell, Mentor, Department of Psychology, College of Science and Technology

The current study examined parent's depression in association with child attachment in a longitudinal study of predominantly low-income families living in Appalachia. Five-four parents and their 4 year-old children participated initially, with 35 participating two years later and 21 families participating six years subsequent. Parents' depression was assessed by the CES-Depression Scale (Radloff, 1977) at each time point. Children's attachment at age 4 was assessed using the Strange Situation Procedure (Ainsworth, Blehar, Waters, & Wall, 1978), which was classified with the PAA (Crittenden, 2004). Attachment at age 12 was measured via the School Age Assessment of Attachment (Crittenden, 2005). Due to low sample size at age 12, attachment was analyzed for low-risk vs. high-risk. As expected, analyses showed that parental depression was associated with increased rates of high-risk child attachment patterns. These results suggest that interventions aimed at decreasing parental depression need to also focus on enhancing the parent-child relationship. This research was supported by MSU's Undergraduate Fellowship and Graduate Assistantship Programs, as well as MSU RCPC and KY NSF grants.

P - 106

Coping with loneliness for those sensitive to rejection

Crager

***Laura J. Secord, Nolan R. Williams, Dr. Laurie L. Couch, Mentor,
Department of Psychology, College of Science and Technology**

Our study compared those who were high vs. moderate vs. low in rejection sensitivity to determine if there were differences in how the groups cope when feeling lonely. We surveyed 286 student participants (54% females/ 46% males; mean age=19.5 years) using the Rejection Sensitivity Questionnaire (Downey & Feldman, 1996) and the COPE Inventory (Carver, Scheier, & Weintraub, 1989), which had been focused on coping with loneliness. A multivariate analysis of variance, using rejection sensitivity (low vs. medium vs. high) as the independent variable and different coping methods as dependent variables, was conducted to test for sensitivity-related differences. Results showed that those highly sensitive to rejection tend to use more venting, denial, substance use/abuse, and behavioral disengagement than some others when coping with loneliness, and they also tend to utilize less planning and positive reinterpretation for growth than others when dealing with lonely experiences.

P - 107

Student-driven improvement of critical thinking lessons and template-guided development of critical thinking skills

Crager

***Makinzee K. Tatman, Natalie G. Justice, Justin Barber, Dr. Wesley White,
Mentor, Department of Psychology, College of Science and Technology**

In this study students identified ways to improve critical thinking lessons (part 1), and we assessed the usefulness of a template-guided process for critical thinking (part 2). Participants were undergraduate students who completed activities in a campus computer lab. In part 1, students viewed lessons, and then they designed and ran pilot studies intended to improve the lessons. One study assessed whether students preferred paper or online versions of lessons. Students preferred paper lessons. Other studies involved varying lesson background, introducing narration, or simplifying wording, manipulations that might be expected to increase the arousal value of lessons. The studies selected by students and the results obtained suggested that increasing the arousal value of online lessons might make students more willing to complete them. In part 2, students read an argument, analyzed the argument into its parts, identified unstated assumptions, and answered evaluative questions. The students also scored their responses by comparing them to models that contained correct responses, that is, they performed metacognition. Results allowed us to assess individual and group weaknesses and strengths in analysis, evaluation, and metacognition. We were also able to begin to see how these processes were correlated with one another. Supported by an MSU URF.

2013-2014

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 2013-2014 awardees and their mentors.

COLLEGE OF BUSINESS

Student URF	Class	Department	Mentor (s)
Shannon Callihan*	Sr.	SBA	Steve Chen
Waylan Coffey*	Jr.	SBA	Janet Ratliff
Alicia Harless	Sr.	SBA	Timothy Hare
Nicholas Mason	Sr.	SBA	Steve Chen
Brandon Hylton	Jr.	SBA	Donna Kizzier
Sarah George*	So.	SBA	Bev McCormick
Kelsey Kuessner*	So.	SBA	Janet Ratliff
Allison Becknell*	So.	SBA	Johnathan Nelson
Shelby Brickey*	Sr.	SBA	Johnathan Nelson
Donald Burns*	So.	SPA	Christine Emrich
Bradley Fyffe*	Jr.	SPA	William Green
Madyson Hutchinson*	So.	SPA	Michael Hail
Sarah Woodall*	So.	SPA	Michael Hail
Cody Murphy*	Sr.	SPA	Murray Bessette
Laura Pfalzer	Sr.	SPA	Murray Bessette
Leonidas Skaggs*	Jr.	SPA	Jonathan Pidluzny
Yen Tran*	Jr.	SPA	Ali Ahmadi

COLLEGE OF EDUCATION

Student URF	Class	Department	Mentor (s)
Katarina Chalk*	Sr.	ECESE	Kim Nettleton
Amy Clausen*	Sr.	ECESE	Sarah Hawkins-Lear
Laura Geiman	Jr.	ECESE	Martha Decker
Lisa Bryant	Sr.	ECESE	Mee-Ryoung Shon
Denis Quitoriano	Jr.	ECESE	Mee-Ryoung Shon
Margaret Horton*	Jr.	ECESE	Mee-Ryoung Shon
Rachel Bender	Sr.	MGSE	Kimberlee Sharp
Emily Bodenlos*	Sr.	MGSE	Lesia Lennex
Megan Brewington	Sr.	21 st CENT	John Curry
Maria Kallas*	Fr.	21 st CENT	John Curry

CAUDILL COLLEGE OF HUMANITIES

Student URF	Class	Department	Mentor (s)
Jasmine Prince	So.	Acad. Hon.	Philip Krummrich
Julieann Helton*	So.	A&D	Joy Gritton
Mary Blanton*	Sr.	A&D	Jennifer Reis
Susan Hobbs	Sr.	A&D	Joy Gritton
Tara Madden*	Jr.	A&D	Jennifer Reis
Sabrina Goble	Sr.	A&D	Seth Green
Heather Burns*	So.	A&D	Jeanne Petsch
Sarah Shepherd*	So.	A&D	Joy Gritton
Jeffery Couch*	Fr.	A&D	Seth Green
Pamela Hammond*	Sr.	CMLS	Jeffrey Hill

Amara Porter*	Jr.	CMLS	Ann Andaloro
Ryan Padgett*	Sr.	CMLS	Jeffrey Hill
Sarah Kadish*	Sr.	CMLS	John Flavell/ Tim Creekmore
Whitney Jones	Sr.	ENG	Deanna Mascle
Samantha Haas*	Jr.	ENG	Alison Hruby
Megan Ison	Jr.	ENG	Deanna Mascle
Devon Collins*	Sr.	ENG	Deanna Mascle
Ben Caldwell*	Sr.	ENG	Glen Colburn
Alexandra Reinke	Sr.	ENG	Deanna Mascle
Benjamin Whisman*	Sr.	ENG	Thomas Williams
Chelise Conn*	Sr.	HPRL	Kristina DuRocher
Katie Messer*	Sr.	HPRL	Alana Scott
Jessica Farrell*	Sr.	HPRL	John Hennen
Jessica Justice	So.	HPRL	Scott Davison
Todd Blevins*	Sr.	HPRL	Alana Scott
Joshua Goble*	Sr.	HPRL	Wendell O'Brien
William T. Parker*	Sr.	IIS	Gary O'Dell
Carter Kozar*	Jr.	IIS	Karen Taylor
Ronald Lambert	Sr.	KCTM	Jesse Wells
Wesley Dalton	Sr.	MThD	Brian Mason
Kyle Malone*	Sr.	MThD	Jennifer Cooper
Adam Dixon*	Sr.	MThD	Susan Creasap
Aaron Buede*	Sr.	MThD	Jennifer Brimson- Cooper
Julie Morris*	Sr.	MThD	Jennifer Brimson- Cooper
Joseph Rivers*	Sr.	MThD	June Grice
Richard Gossett	GR	MThD	Brian Mason
John Siedenberg*	Sr.	MThD	Denise Watkins
Irvin Juarez	Fr.	SSWC	Shondrah Nash
Matthew Tolliver	Sr.	SSWC	Bernadette Barton
Hannah Willis*	Sr.	SSWC	Rebecca Katz
Demi Jacques*	Sr.	SSWC	Elizabeth Perkins
Victoria Parker*	Sr.	SSWC	Elizabeth Perkins
Hannah Mabry*	Jr.	SSWC	Bernadette Barton
Sharon McIntosh*	Jr.	SSWC	Rebecca Katz
Julia Back*	Jr.	SSWC	Lisa Shannon
Marilyn Holmes*	So.	SSWC	Elizabeth Perkins

College of Science and Technology

Student URF	Class	Department	Mentor (s)
Andrew Greene*	So.	AET	Hans Chapman
Zachary Schneider*	So.	AET	Hans Chapman
Garrett Bredar*	So.	AGR SCI	David Smith
Clayton Wilson	So.	AGR SCI	Tyler Mark
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Student Index

Abbott, Zachary	18, 72, 74, 81
Abney, Abigail.....	54
Abney, Stephanie	54
Adkins, Brooke	53
Adkins, Jennifer	70
Adkins, Kyle D.	60
Allen, Zachary C.....	45
Anderson, Megan.....	70
Back, Julia.....	50, 79
Baldwin, Allan	74
Banks, Corey.....	74
Barber, Justin	17, 74, 77
Becerra, Zoe	72, 74
Becknell, Allison L.	42, 78
Bender, Rachel.....	78
Benjamin, Andrea	70
Bickett, David	72
Bishop, Virginia.....	14
Blankenship, Scott	35, 67, 81
Blanton, Mary.	10, 78
Blevins, Morgan D.....	73
Blevins, Todd.....	12, 79
Bodenlos, Emily.....	54, 78
Braccini, Christopher	38
Bradley, Amber Dawn	54
Bradley, Kyle	14
Branam, Shelby.....	19
Brashears, Jessica Ann.....	67
Bredar, Garrett	60, 79
Brewington, Megan.....	78
Brickey, Shelby.....	27, 78
Bridges, Grant.....	8
Brock, Marsheena	69
Brooke, Sharon J.....	66, 80
Brooks, Sara S.....	51
Brough, Hannah	61, 79
Brown, Rachel A.....	63, 64, 80
Bryant, Lisa.....	78
Buede, Aaron	5, 79
Burns, Donald James	41, 78
Burns, Heather A.	9, 78
Burriss, William.....	80
Burroughs, Katie.....	70
Byrd, Jonathon	80
Caldwell, Benjamin.....	6, 79
Callihan, Shannon	27, 77
Cantrell, Michael Blake	61
Carson, William	80

Cavins, Andrew.....	80
Chalk, Katarina.....	54, 78
Chang, Jorge.....	19, 39, 80
Clausen, Amy.....	33, 53, 78
Coffey, Waylan.....	42, 78
Collier, Steve.....	35
Collins, Devon R.....	45, 79
Collins, Justin.....	80
Combs, Brandon.....	55
Combs, Kendra.....	17, 72, 74
Conn, Bryan Allen.....	15
Conn, Chelise Lynn.....	47, 79
Cooke, Lucas.....	80
Couch, Jeffery.....	51, 78
Cox, Dallas.....	46
Dailing, Jesse L.....	24
Dalton, Wesley.....	79
Dang, Kien T.....	25, 37, 80
Daniel, Abigail.....	71
Daniels, Jordan M.....	75, 76, 81
Davidson, Patrick.....	67
Davis, Adam.....	79
Davis, Alex.....	11
Davis, Harley J.....	61, 79
Davis, Mariah.....	54
Deaton, Michelle S.....	73
Dixon, Adam.....	49, 79
Duffy, Lauren.....	31, 38, 80
Duvall, Ashley.....	70
Eckstein, Meredith.....	62, 80
Edie, Daniel.....	74
Elmlinger, Daniel.....	73, 74, 81
Evans, Lauren F.....	45
Evans, Victoria.....	22, 80
Farhat, Caitlin.....	44
Farrell, Jessica.....	13, 14, 79, 80
Farris, Jayme.....	72
Ferguson, Carla.....	71
Ferguson, Gabriel.....	42
Fitzpatrick, Casey.....	21, 74
Fitzpatrick, Jon.....	80
Franklin, Alyssa.....	28
Friskney, Doyle.....	34
Fugate, Katelyn M.....	75, 76
Fulton, Olivia.....	33
Fyffe, Bradley.....	28, 78
Gasser, Taylor L.....	62, 80
Gebka, Stephanie.....	33, 55
George, Sarah.....	43, 78

Gieman, Laura.....	78
Gingras, Carol-Rose.....	22
Glossner, Stephen	59
Goble, Joshua.....	48, 79
Goble, Sabrina.....	78
Gooding, Kayla.....	71
Gossett, Richard.....	79
Graves, Chris.....	30
Greene, Andrew	59, 79
Grice, Alison N.	65
Griesenauer, Justine	58
Grindrod, Jennafer L.....	26
Haas, Samantha L.	45, 79
Hahn, Alyssa.....	72
Hale, Valerie Paige	34
Hall, Amber.....	55
Hall, Caitlin.....	74
Hall, Haley	80
Hall, Shelbi D.....	73
Hamilton, Amber.	58
Hamilton, Brannah.....	48
Hamilton, Mackenzie.....	63, 80
Hamm, Ashley N.	73
Hammond, Pamela Shay	7, 78
Hardin, Mathew	30
Hardin, Sara	70
Harget, John	20
Hargett, Dylan.....	39
Harless, Alicia.....	78
Harlow, Elizabeth	11
Harris, Glenn T.	76
Hatfield, Robert S.	40
Heaberlin, Rachel.....	54
Healea, Jordan.....	24, 80
Helton, Charlene	70
Helton, Julieann	9, 78
Helton, Minus R.....	63, 80
Hensley, Cierra	72, 74
Hobbs, Montana.....	52
Hobbs, Susan.....	78
Hohenstein, Erich.....	19, 80
Holbrook, Josh	18, 72
Holbrook, Miranda.....	80
Holbrook, William M.....	20
Holley, Emily	46
Holmes, Marilyn J.....	50, 79
Horton, Maggie	32, 78
Hosoda, Asa	13
Howard, Audreanna	70

Huff, Allison	56
Huff, Jenna L.	74
Hutchinson, Jared.....	71
Hutchinson, Madyson Elizabeth	41, 78
Hylton, Brandon.....	78
Ison, Megan M.	45, 46, 79
Jackson, Kevon Z.....	68
Jacques, Demi	50, 79
Jamison, Keisha	54
Johnston, Allison.....	7, 45
Jones, Whitney	79
Juarez, Irvin.....	79
Justice, Jessica.....	79
Justice, Natalie G.	17, 77, 81
Kadish, Sarah	7, 79
Kallas, Maria Leeanne	56, 78
Katz, Leah	12, 75
Kelsey, Wesley	39
King, Bethany	52
Kirchner, Amber	68
Kirtland, Marina.....	62, 80
Kiser, Nathan	27
Knell, Janie L.	15, 80
Knippenberg, Austin	63, 64, 80
Koeninger, Allexa	73
Koontz, Kelsey.....	32
Kootz, Macy T.	74
Kosakowski, Alek R.	38, 80
Kozar, Carter.....	13, 47, 79, 80
Kremser, Victor.....	79
Kuchenbrod, Andrew	8
Kuessner, Kelsey.....	43, 78
Lackey-Stewart, Aaron	66
Lamb, Zachary W.	20, 68, 80
Lambert, Ronald	79
Lambert, Tyler	43
Lee, Benjamin	47
Li, Dandan.....	76
Lucas, Bailey L.	64, 80
Lucas, William.....	59
Mabry, Hannah	11, 79
Madden, Tara	9, 78
Maldonado, Dylan.....	80
Malone, Kyle.....	5, 79
Malone, Lindsay	71
Marcum, Matthew.....	18
Mason, Nicholas	78
McClanahan, Sarah.....	80
McGinnis, Michael S.	69, 80

McIntosh, Sarah	79
McIntosh, Sharon Michelle.....	51, 79
McKenzie, Clem	54
McKinley, Zachary J.....	62, 80
Mead, Brooke.....	44
Messer, Katherine	48, 79
Miller, Travis	29
Modaff, Kelly.....	80
Moffitt, William.....	37
Montgomery, Lisa.....	56
Morgan, Calie	61
Morris, Ashley Nicole.....	16, 75, 81
Morris, Julie	49, 79
Murphy, Cody	29, 78
Napier, Jared	25
Nash, Taylor.....	56
Neely, Adriana	43
Nichelson, Kayla D.....	76
Nichols, Haley J.....	64, 80
Nickell, Emily.....	64
Nipper, Becky	71
Nolan, Chelsea.....	72
O'Brien, Annie.....	53
Overby, Emilie.....	71
Padgett, Ryan E.....	7, 79
Parker, Victoria.....	12, 79
Parker, William T.....	35, 52, 79
Patrick, Jacob	22
Payne, Katherine.....	71
Pennington, Megan	54
Perkins, Amanda.....	61, 80
Perkins, Megan	72
Peterman, Trenton.....	36
Petrey, Genna.....	22, 79
Peveto, Tahler	71
Pfalzer, Laura.....	78
Porter, Amara.....	7, 79
Posey, Melanie.....	72
Preston, Andrew G.....	75, 76, 81
Price, Brittani	74, 80
Price, Laura.....	71
Price, Shelby R.....	66, 80
Prince, Jasmine	78
Proctor, DeAnna L.....	57
Quitoriano, Denis.....	78
Rader, Helen J.....	34
Rader, J.P.	34
Rasp, Benjamin.....	22, 65, 80
Ratliff, Kelli	71

Reed, Kasey	21, 80
Reinke, Alexandra.....	79
Renyer, Kathryn.....	65
Rice, Mallory	71
Rich, Ali.....	74
Richardson, Channing.....	22
Riel, David R.	34
Rivers, Joseph T.....	49, 79
Roe, Adam	18, 72
Rollins, Evan S.....	76
Royse, Cassandra	70
Rummage, Erin	54
Ruth, Ashley	18
Samons, Brooklyn.....	23
Sargent, Justin.....	16, 81
Satterfield, Trevor.....	77
Schneider, Zach.....	59, 79
Secord, Laura J.....	73, 77, 81
Sergent, Sam	80
Sexton, Amber	74
Shanley, Greg.....	59
Sharma, Biswas.....	24, 69, 81
Shepherd, Katlin	71
Shepherd, Sarah	53, 78
Siedenbergl, John	6
Sizemore, Kayla M.	75, 76
Skaggs, Clay	43
Smith, Megan.....	74
Smith, Rebekah.....	71
Smith-Blair, Allison.....	57
Souders, Daniel.....	71
Spencer, Robert.....	60
Sphar, Kelsey	44
Stacy, Kristen.....	33
Stratton, Murphy.....	25
Sticklen, Mark.....	40
Swafford, Chayce.....	31
Tackett, Brittany	70
Tackett, Cory.....	64
Tatman, Makinzee K.....	17, 77, 81
Taulbee, Jessica.....	54
Taulbee, Zachary.....	30, 80
Thomas, Kiersten	71
Thomas, Rebecca	44
Tolliver, Matthew	79
Tran, Yen	28, 78
Travis, Heather.....	32
Trenary, Dakota	47, 81
Tucker, Chelsea E.	36

Turner, Monica	71
Utterback, Tanner	79
Virgin, Ethan	71
Waddell, Erin	74
Wages-Robinson, Alexandria	57
Ward, Richard	74
Washburn, Brooke	22, 80
Webb, Mary D.	23, 79
Whisman, Ben.....	6, 79
Whitt, Hali.....	72
Whitt, Natasha.....	21
Wilczewski, Sarah.....	80
Wilhoite, Andrea P.....	69, 80
Williams, Alexandria	80
Williams, Nolan R.	17, 74, 77, 81
Willian, Lewis M.	57
Willis, Hannah	12, 79
Wilson, Clayton	79
Wireman, Ashley	70
Witkowski, Travis A.....	65, 80
Witt, Chelsea.....	72, 74
Woodall, Sarah Caitlin.....	41, 78
Young, Justin	42
Young, Kristin H.....	23