



16th Annual
University of Nebraska at Kearney

Student Research Day

Program & Abstract Booklet

• April 10th, 2014 •



Schedule of Events

Thursday, April 10, 2014

7:30 am to 9:00 am Students set up posters in
Ponderosa Room of the Nebraskan
Student Union

9:00 am to 11:00 am Poster Judging

12:00 pm to 1:15 pm Luncheon with Guest Speaker,
Dr. Bradley Miller

1:30 pm to 3:30 pm Oral Presentations & Performances

3:30 pm Awards Ceremony & Reception



Guest Speaker

Dr. Bradley Miller



Dr. Bradley Miller is a Visiting Assistant Professor of Chemistry at William Jewell College in Liberty, Missouri. He received his Ph.D. in Chemistry with Pharmaceutical Science and Oral Biology co-disciplines from the University of Missouri – Kansas City in 2013. Additionally, he received a Graduate Certificate in College Teaching and Career Preparation from UMKC. In 2007, he received a BS in Chemistry with a Business/Sales emphasis from the University of Nebraska at Kearney.

His work at UMKC was completed in collaboration with the UMKC School of Dentistry where, in association with the Department of Defense, they investigated the potential of silicon-based compounds for use as a bone cement. Additionally, he had a project on the synthesis and barrier to enantiomerization of extended twisted polycyclic aromatic hydrocarbons. He has had the opportunity to present his work at regional and international conferences such as the Meeting of the International Association for Dental Research and Gordon Research Conference on Physical Organic Chemistry. In his time at UMKC, Bradley was selected for the Preparing Future Faculty Fellowship, a program which exposes graduate students to the expectations and duties of faculty in higher education.

While at UNK, Bradley conducted two years of research on the synthesis and characterization of solvatochromic “molecular grid” complexes under the tutelage of Dr. Christopher Exstrom in the Department of Chemistry. In 2006 he participated in the Summer Student Research Program at UNK, which resulted in a presentation at the National Conference on Undergraduate Research at Dominican University of California in San Francisco. While at UNK, Bradley was in the Honors Program, a resident advisor in Randall Hall, and a member of the Loper baseball team for two seasons. He is grateful for his time at UNK and believes that the opportunities and support he was given there are a major factor to where he is today.

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Poster Abstracts

Fine Arts and Humanities

Communication

Poster 1 – Hanna Jorgensen

Department: Communication

Advisor: Dr. Derrick Burbul

Title: ***Restoring the Native America Spirit***

This research project is an extension of my previous student research project. Previously, I restored five of my Great-Grandfather's photographs that he took of Native Americans across Nebraska. The photos are over 75 years old. In this extension of my project, I continued to restore more of the Native America photos as well as have them displayed at the library in my hometown of Waterloo, Nebraska. Along with restoring the photos, I also did more extensive research on the Native Americans in the photographs as well as their environments.

English

Poster 2 – Hannah Blum

Department: English

Advisor: Dr. Michelle Beissel-Heath,

Title: ***Fraternal Love on the Frontline***

I analyzed three different types of literary works, deciphering the fraternal bond men create while at war, and how this bond affects their survival, and the way they cope after the war has ended. The three literary works I used were Eugene Sledge's memoir "With the Old Breed", Tim O'Brien's short story "In the Field", and Yusef Komunyakaa's poem "Facing It".

Poster 3 – Trinita Kennedy

Department: English

Advisor: Dr. Martha Kruse

Title: ***Abstinence Porn***

"Abstinence Porn" is a hot topic that is forming in the Young Adult literature world. With the rise of popularity with books such as the Twilight series by Stephanie Meyer and The Immortal Instruments series by Cassandra Clare the audience of Young adult literature is being exposed to this new trend. The question then becomes what exactly is "Abstinence Porn" and what are the authors that are using this trend promoting through their writing?

Modern Languages

Poster 4 – Alecia Friedel

Department: Modern Languages

Advisor: Dr. Chris Jochum

Title: ***Analysis of the SIOP Model***

My research includes a summary of the SIOP Model used in ESL classrooms.

Poster 5 – Alyson Wolfe

Department: Modern Languages

Advisor: Dr. Chris Jochum

Title: ***Using Movies to Increase Foreign Language Comprehension***

The purpose of this research project is to better understand the use of movies as a way of teaching foreign languages, by conducting a critical literature review on the topic. It includes several different variations of languages and subtitles. It shows the effects of movies with subtitles, both in the target language and the native language, and without subtitles. This is a rapidly growing field with lots of research already done, but much more possible.

Music & Performing Arts

Poster 6 – Morgan Wipperling

Department: Music & Performing Arts

Advisor: Dr. Sharon Campbell

Title: ***Connections between Music and Language Learning***

My research project focuses on the correlations between speech acquisition and music. I have collected a survey of research on connections between learning language and music together and the reactions in the brain, focusing primarily on language learning in infants, and language learning in those who have autism spectrum disorders. This semester I have put together a paper on this topic, and my poster will present a short summary of my work. My hopes for the future of my project will be to conduct my own research on language learning and music therapy.

Behavioral & Social Sciences

Geography & Earth Sciences

Poster 7 – Stephanie Ayers

Department: Geography & Earth Sciences

Advisor: Dr. Jason Combs

Title: ***Up in Smoke: Colorado's Marijuana Legalization and Recent Voting Trends***

The main focus of this research is to examine how social policies compare with dispensary locations in Colorado, where recreational marijuana use was legalized as of January 1, 2014. This analysis uses recent census data and voting results to provide a demographic breakdown of the population by factors such as age, gender, and political affiliation. Additionally, the analysis includes a brief inquiry of the cultural, economic, and political implications of legalization. Data highlight the spatial patterns of both recreational and medicinal marijuana dispensaries with voter association to more thoroughly understand political patterns in Colorado. Although similar studies have looked at social conservatism on a nationwide-level, Colorado has not yet been investigated in such a way; therefore, an examination of this areal extent provides

important information regarding the legalization and the groups who are for or against the issue.

Poster 8 – Zach Davidson

Department: Geography & Earth Sciences

Advisor: Dr. Jason Combs

Title: ***College Student Debt by Region in the United States***

In the United States, in-state tuition rates for full-time students at four-year public institutions have dramatically increased from 1991 to 2013, jumping on average from \$3,350 to \$8,660 during that time. With higher tuition costs, the new social norm is for students to acquire federal or private loans to cover a portion of the rising expenses. As a result, student loan debt is a heavy burden for some 60 percent of all recent graduates. Most American students graduate in a financial quagmire, averaging over \$27,000 in student loan debt. The purpose of this study is to examine the correlation between the increase of student loans by amount and popularity and the increase of tuition at a regional-level. This project divides the United States into traditional regions—Midwest, Northeast, South, and West—and aggregates each region's decrease in educational subsidies and the average student loan debt, and then explains the differences between the regions.

Poster 9 – Ashley Larsen

Department: Geography & Earth Sciences

Advisor: Dr. Paul Burger

Title: ***Using GIScience and Gravity Modeling to Predict UNK's Freshmen Class***

Competition for incoming freshmen undergraduates continues to increase as information is literally at the fingertips of prospective students and university recruitment dollars are focused on those most likely to enroll at a respective institution. Universities in Nebraska are further challenged by a steady decline in the percentage of population under 18 years of age over the past three censuses from 27.2% in 1990 to 25.0% in 2010 (Census Bureau 2010). While county-level data are available from organizations such as Nebraska's Coordinating Commission for Postsecondary Education (CPPE) and institutions, such as the University of Nebraska at Kearney (UNK), employ various modeling techniques to predict those prospects most likely to enroll, little has been done in the way of understanding the role of geography on Nebraska's undergraduate enrollment process. This study applies GIScience and gravity modeling techniques to in state college bound freshman data to determine the impact that institutional size and distance have on enrollment at the University of Nebraska at Kearney.

Poster 10 – Ru Meng

Department: Geography & Earth Sciences

Advisor: Dr. Vijendra Boken

Title: ***The Spatial Distribution of Earthquakes in China from 1920 to 2013***

China experiences a substantial number of earthquakes costing human lives and economic damage. However, the frequency of earthquakes is not uniformly distributed across China. Certain regions experience more earthquakes than other regions. This study analyzes earthquakes with a moderate to high intensity and examines their spatial distribution. The data on earthquakes was collected for the period from 1920 to 2013. Their locations were mapped using ArcGIS software. Discussions include possible reasons for the variation in the frequency of these earthquakes. The regions along the Indian Plate and the Eurasian Plate appear to experience higher frequency of earthquakes.

Poster 11 – Shelby Rowan, Primary Presenter

Co-Presenters: Christine Laughlin, Zachary Waller, Connor Dudley

Department: Geography & Earth Sciences

Advisor: Dr. Vijendra Boken

Title: ***Keystone XL Pipeline: Economic Boom or Environmental Bust?***

Ceaseless disputes regarding the construction of the TransCanada Keystone XL pipeline have challenged both the enthusiasts and the critics of the multi-billion dollar project. The proposed 1,179 mile Keystone XL initiative

stretching from Hardisty, Alberta, Canada to Steele City, Nebraska holds prospective for greatness as well as possible failure. This study will include conceivable ramifications if a crude oil spill were to occur in regards to the environment, with a concentration on water resources in Nebraska. A potential spill could refute the gains in thousands of jobs, the lowering of national dependency on foreign oil, and decreasing fuel prices. In addition, due to the dependency on the Ogallala Aquifer, harm done to this major water resource could likely affect the lives of hundreds of thousands of people.

Poster 12 – Chase Svoboda, Primary Presenter

Co-Presenters: Alex Obermier, Hugo de Carvalho Ricardo

Department: Geography & Earth Sciences

Advisor: Dr. Vijendra Boken

Title: ***Spatial Distribution of the Water Availability For A Few Highly Populated Countries***

Water plays a major role in the lives of humans. Over the years, both quality and quantity of water have decreased due to the rapid population growth and failure to control our wastes. This problem will only be augmented in the future as the human population increases. We depend on it for day to day survival: drinking water, crop irrigation, cattle water, etc. Not only do humans rely on it, but so does the environment. There are many negative effects that humans are imposing due to the over exploitation of this valuable resource. In this study we compare the top ten countries based on population

size and their respected available water resources. This paper will look at the spatial distribution of available water per capita and try to identify the countries expected to face water crises in future.

Political Science

Poster 13 – Douglas Cole Fenske

Department: Political Science

Advisor: Dr. Peter Longo

Title: ***Good Environmental***

Stewardship by Farmers: Debunking the Traditional Myth of Bad Environmental Stewardship Surrounding Agriculture

Much of the conventional wisdom surrounding the environmental stewardship of farmers points to them being “lackluster” or even “bad” stewards of the land. They are often ignored when they want to help the environment because of this persona (Shoreman–Ouimet, 2010). This research looks to show that farmers are not bad environmental stewards and many farmers could even be considered good environmental stewards. To show that farmers are inherently good environmental stewards the research focused on three huge improvements made to agriculture over the past fifty years. The three improvements include; improvements in irrigation technology, improvements in crop technology, improvements in farming technology.

Poster 14 – Karson Kuntz

Department: Political Science

Advisor: Dr. Christie Maloyed

Title: ***Value for Money: Are Our Schools Spending Money Effectively***

Education is entering an era of less funding and larger accountability. This means that schools have to be conscientious of how they spend their money. In this research I examine how Colorado and Nebraska public school districts are doing in the area of value for money. Value for money can be understood as the amount of student success a district receives for the amount they spend per student. Obviously, the ideal district will enjoy high levels of value for money. In my research, I look at four school districts in both Colorado and Nebraska. I have selected two large school districts of around 50,000 students, two districts of 10,000 students, two districts of 1,500 students, and finally two rural districts of 200 to 300 students. In this case study I control for variables to explore whether variation in student success can be attributed to differences in state spending per student.

Poster 15 – Nathan Moore

Department: Political Science

Advisor: Dr. Peter Longo

Title: ***Impact of Natural Disasters on Small Businesses***

Natural disasters happen in many different ways: through hurricanes, tsunamis, forest fires, storms and earthquakes. The occurrence of natural disasters has been a very regular phenomenon in the past decade with Hurricanes Katrina and Sandy hitting the US in 2005 and 2012 respectively, the floods and fires of Colorado, and a horrible blizzard in South Dakota that destroyed a ton of cattle and crippled ranchers. Natural disasters, apart from laying to waste many human lives also destroy many business enterprises both big and small (Spire, 2013). In this research paper my focus will be on how these disasters have over the years affected the United States economy and also how they impacted small businesses in terms of their operations and disaster recovery plans.

Poster 16 – Taylor Reichardt

Department Political Science

Advisor: Dr. Peter Longo

Title: ***The Constitutionality of Domestic Governmental Spying***

My research is delving into the information that Edward Snowden released regarding governmental spying, and the constitutionality of the government's alleged programs. I am using scholarly research articles, as well as Supreme Court cases that involve the practices outlined by Snowden.

Poster 17 – Shelby Rowan, Primary Presenter

Co-Presenter: Adam Ripp

Department: Political Science

Advisor: Dr. Peter Longo

Title: ***Exploring the Value of Rural Life: Providing Curricula Opportunities***

From Thomas Jefferson to Wendell Berry, citizens have long championed the viability of agrarianism. Scholars such as Robert Putnam emphasized that social capital is profoundly abundant in smaller, rural communities. While the necessity of farmers and rural dwellers is present in the curricula of high schools and universities, the opportunities for in-depth scholarship about rural life could be greatly expanded. There are opportunities to enhance college offerings in order to provide students with experience pertaining to rural life. Study abroad programs serve as a model for other endeavors such as rural travel experiences. This poster will establish the theoretical importance of rural course offerings, explore curricular opportunities analogous to study abroad offerings, and propose curricula opportunities for the experiential study opportunities of rural America and abroad.

Poster 18 – Bidhata Thapa

Department: Political Science

Advisor: Dr. Satoshi Machida

Title: ***Minority Behavior in Nepal***

The purpose of this study is to analyze minority behavior in Nepal. In recent years, Nepal has been going through significant degrees of changes in different fields. One of the most critical issues is the emergence of minority groups in

Nepal. Along with the political upheaval in Nepal, minority groups have been over-represented in the political system. The goal of this study is to examine how minorities react to the political instability in Nepal. The present research also investigates the potential changes that this situation can consequently induce. By so doing, this study advances our understanding of minority behavior in a quickly changing situation.

Poster 19 – Trevor Toteve

Department Political Science

Advisor: Dr. Peter Longo

Title: ***Education as a Fundamental Right***

Education has been one of the most important functions of federal government since the passage of No Child Left Behind (NCLB). The Supreme Court has also suggested that education in a democratic society is the very tool to build a successful American. This prestige however, has failed to fix the inequalities present in our system of education. A fundamental right to education would close the gaps and properly define the necessary amount of equity and funding to ensure our youth are not being deprived of a proper and adequate education. Through thorough examination of what constitutes a fundamental right, I believe education has met the criteria. There are many states that also believe this and have deemed education a fundamental right; their success will be compared to the failures of ones that have lagged behind and the courts, which have left education in the backseat.

Poster 20 – Courtney Wagner

Department: Political Science

Advisor: Dr. Christie Maloyed

Title: ***Veterans' Benefits: Are They Getting the Help They Need?***

Coming back from a war zone can be a rather tough experience. There are many potential health problems that could occur, not only physical, but mental and emotional as well. There are programs set up by the United States government to ensure that the health costs for the individuals that defend our country are covered. However, these programs don't necessarily cover everything. My research examines veterans' benefits programs. How are the benefits they are receiving now helping them? What sorts of programs are set up to ensure these individuals receive such benefits? Are they enough to sustain their quality of life while they recover from war?

Psychology

Poster 21 – Chelsea Atkins

Department: Psychology

Advisor: Dr. Krista Forrest

Title: ***I didn't do it: Alibi Prototypes for a Love-Triangle Murder Scenario***

We investigated possible alibi prototypes for a love-triangle murder. Participants read a hypothetical murder scenario and subsequent police interrogation. They then constructed an alibi as if they were the murderer. We coded the responses into 5 categories where the suspect: was at home, in a remote location, in public, using an electronic timestamp, or trusting a witness. The most common alibi created was the home alibi, followed by being in public, and then the witness alibi. The remote location and electronic alibis were the least frequently mentioned. We did not find a significant effect of media on alibi type or the ability to verify an alibi. We also did not find a significant effect of gender on alibi type. These results indicate alibi prototypes for a hypothetical love-triangle murder that are not influenced by the media. In turn, media may not influence the alibis of individuals who are actually interrogated.

Poster 22 – Nicole Green

Department: Psychology

Advisor: Dr. Krista Fritson

Title: ***The Effects of a Therapy Ball on Academic Success***

The typical classroom in the United States contains rows of desks with hard chairs. For any child this is a difficult environment to stay focused and learn in,

but it is even more challenging for a student with disabilities. Two disorders that commonly cause problems for a child in a classroom setting are Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD). Research has shown that these children need subtle environmental stimulation in order to concentrate. Therefore, many teachers are substituting therapy balls for desk chairs in their classrooms. Studies have found a significant improvement in these children's in-seat behavior and their handwriting while using a therapy ball as a desk chair.

Poster 23 – Katelyn Haschke

Department: Psychology

Advisor: Dr. Krista Fritson

Title: ***Reflective Journaling: Building Middle School Students' Self-Efficacy and Self-Esteem***

Previous research supports that reflective journaling positively impacts college students' course engagement, synthesis of thought, critical thinking, and application of course material into their daily lives (Pajares, 2003). Fritson (2008) found that journaling increased college students' self-efficacy after five reflective journaling assignments. Support strategies such as journaling also improve mood and functioning of depressed and anxious individuals (Nicholas, 2006). Additional studies show that journaling improves self-awareness, active self-reflection, and changes individuals' thoughts, perceptions, behaviors, and mood. Given that middle school students are experiencing significant biopsychosocial developmental changes, it seems likely

that their intrapersonal growth will be influenced by reflective journaling. The purpose of this study is to explore changes in adolescents' self-efficacy, self-esteem, and stress levels through reflective journaling about empowering topics.

Poster 24 – Jordan Hopkins, Primary Presenter

Co-Presenter -- Bethany Bareman

Department: Psychology

Advisor: Dr. Robert Rycek

Title: ***Morality and its Effect on Lying with College Students***

This study looked at 115 participants to determine if there is a relationship between moral reasoning and lying using eight short lying situations and a modified version of the DIT. Follow-up questions included information on religious participation. Results showed no significant differences between moral reasoning stages and determinants of lies. A significant result found that there is a difference between the participants' moral reasoning stage and how they responded to the first and fourth lying situation. A notable trend between religious participation and responses to lying situations was present. However, our hypotheses were not supported in that there was no relationship between moral reasoning stages and lying or religion at the .05 level overall.

Poster 25 – Renming Liu

Department: Psychology

Advisor: Dr. Stephanie Anderson

Title: ***Different Perception of Facial Attractiveness between American and Chinese***

Attractiveness is an important part of modern life, and contemporary people give high value to it. However, attractiveness does not have a universal standard. People from various cultures can perceive attractiveness differently. Many previous studies from an evolutionary perspective have indicated that “average” faces are most attractive, because it is an indicator of fitness. Other factors, such as skin color, can also affect judgments of attractiveness. This study tested the results of previous research on these two variables, as well as examining differences in the perception of attractiveness between different cultures (specifically, the United States & China). In this research, 128 participants were recruited to complete some perception questionnaires. Regardless of nationality, average faces were perceived as more attractive than not average faces, in support of evolutionary theory. In addition, American students preferred faces with darker skin; however, Chinese students preferred faces with lighter skin.

Poster 26 – Jane Sosoo

Department: Psychology

Advisor: Dr. Krista Fritson

Title: ***The Effect of Competitiveness and Locus of Control on GPA***

Interpersonal competitiveness and locus of control effects on GPA were investigated through the Revised Competitiveness Index and the Locus of control scale respectively. It was hypothesized that students who are highly interpersonally competitive will have a lower GPA and will be more likely to have an internal locus of control compared to those who are not interpersonally competitive. The outcome of this research will contribute to the clarification on the relationship between competitiveness and academic success.

Poster 27 – Heather Wilkie

Department: Psychology

Advisor: Dr. Robert Rycek

Title: ***Self-Control and Academic Success***

The purpose of this study was to examine the effects of self-control, self-esteem and ACT scores on college academic success. Participants were given an online survey in which they measured their self-esteem, self-control, and specific behaviors. Participants were also asked to self-report their ACT scores and current GPA. Results showed a strong correlation between self-control and GPA and a weak correlation between ACT scores and GPA. Results also showed a strong correlation between self-esteem and GPA results.

Social Work

Poster 28 – Claire Tolstedt

Department: Social Work

Advisor: Dr. Jody Van Laningham

Title: ***The Effects of Mitigating Factors
on the Relationship between
Socioeconomic Status and
Children's Academic Success***

This study examines the effects of mitigating factors on the relationship between income and academic achievements measured by reading level and grades. Elementary children were surveyed by the researcher, parents filled out take home surveys, and data was given by the school to help provide a wide view of the child's life to examine which factors impact children's academics the most. There is a significant relationship between socioeconomic class and academic achievement, below average grades were received by 43.8% of high income children and above average grades were achieved by 85.7% of high income children. There was also a significant correlation for families with high levels of expectations, high levels of involvement, preschool enrollment, and higher levels of parental education. This research provides the basis for further study on the specific topics examined to determine how best to refine the interventions and spread their use with children in rural Nebraska.

Natural & Physical Sciences

Biology

Poster 29 – Loany Fajardo

Department: Biology

Advisor: Dr. Letitia Reichart

Title: ***Preliminary Investigation of Plasma Lipid Metabolites for a Spring Migratory Bird in Central Nebraska***

Variation in lipid metabolism is linked to differences in resource use and innate genetic variation among individuals. Specifically, understanding variation in lipid metabolism in migratory bird species provides a model through which to study nutritional factors as well as biochemical and endocrine regulation of food intake and body mass. Central Nebraska is a common migratory stopover site for many birds species each year, where migratory birds stop to refuel and accumulate lipid reserves. Migratory birds require lipids as their prime energy source to complete their long-distance flights to the breeding grounds. For this research project we will examine variation in plasma lipid metabolites of a species of migratory bird that stops in central Nebraska during spring migration. Here we report the number of species captured during our Spring 2014 trapping effort and

preliminary data for levels of plasma lipid metabolites in one species.

Poster 30 – Tad Fuchs

Department: Biology

Advisor: Dr. Kimberly Carlson

Title: ***Production of Nora Virus ORF1 Monospecific Antisera***

The Nora virus is a picorna-like virus with four open reading frames (ORFs) while most others have a single long reading frame in other picorna-viruses. There is not much known about the individual open reading frames encoded by the virus including ORF1. The purpose of this study was to produce monospecific antisera specific to ORF 1 protein with validation of specificity via a Western blot analysis. ORF1 protein was purified from BL21 E. coli cells via affinity column chromatography. Purified ORF1 was injected into mice for the production of monospecific antisera. The monospecific antisera will be useful for characterization of ORF1's role in Nora virus replication.

Poster 31 – Derek Kleier, Primary Presenter

Co-Presenter: Jordanna Glock

Department: Biology

Advisor: Dr. Dawn Simon

Title: ***Intron Degeneration in the Lichen Fungi Teloschistes***

Introns have no known general function, however improper splicing can have serious consequences. Despite their ubiquity and importance, their origin is not well understood. We are particularly interested in ribosomal RNA (rRNA) introns and hypothesize that they arise from group I ribozymes. Here we focus

on one position in the small subunit in the fungal genus *Teloschistes*. The primary objective of this study is to increase sampling and discover additional introns that represent intermediate steps in the transition from group I to spliceosomal. We have collected 14 specimens from Nebraska and five herbarium specimens from Mexico. Sequences of the introns confirm that all are closely related, yet variable and show loss of group I intron specific helical domains. In addition, RT-PCR assays indicate differences in splicing. The Nebraska samples all appear to either not splice, or splice at low efficiency, whereas ligated exons are amplified from the herbarium specimens.

**Poster 32 – Krissa Lewandowski,
Primary Presenter**

Co-presenter: Loany Fajardo

Department: Biology

Advisor: Dr. Letitia Reichart

Title: ***Identification of Genetic Markers
Useful to Measure Genetic
Variability in two Painted Turtle
Populations***

Examination of population genetic diversity with a population of organisms is important to better understand potential mechanisms of evolutionary change within populations. In this study we collected tissue samples from individuals within a population of Painted turtles (*Chrysemys picta*). The objectives of this study were to extract DNA from turtle claws collected in the wild and then to identify possible variable genetic markers for use in a future study of genetic diversity within this population. DNA was successfully extracted from multiple individuals and we have identified a

single genetic locus for use in future analyses of genetic diversity.

Poster 33 – Kirsten Lipps

Department: Biology

Advisor: Dr. Kimberly Carlson

Title: ***Does AZT Protect Drosophila
Melanogaster From Nora Virus
Infection?***

Drosophila melanogaster, the fruit fly, is an invertebrate model organism for innate immunity and aging. Nora virus, a picornavirus, is a pathogen unique to *D. melanogaster* that does not cause any obvious acute or chronic symptoms yet establishes persistent infection by inhibiting the RNA interference (RNAi) pathway, an innate immune response. In this study, wild type and immunocompromised mutant populations of *D. melanogaster* were treated with azidothymidine (AZT), an antiretroviral drug and an inhibitor of RNAi, or sucrose, which served as a control. These populations were either uninfected (negative control) or infected with Nora virus (experimental). After treatment, dead flies were collected and a survivorship curve generated to evaluate the longevity of the populations and potential links between innate immune responses and aging.

Poster 34 – Yannett Ortiz

Department: Biology

Advisor: Dr. Brad Ericson

Title: ***Identification of Phage T7
Neutralization Epitopes on gp17***

Understanding virus neutralization is central to the development of viral vaccine strategies. Phage T7 is a virus of

the E. coli bacterium. We have evaluated the viral proteins known to be involved in attachment to the cell wall of E. coli and based on algorithmic model predictions, have designed a peptide predicted to bind antibodies involved in neutralization. The results show that our designed protein does indeed bind antibodies previously produced against phage T7 via Western blot analysis. Future work will include using our gp17 peptide to elicit an antibody response and determine if those antibodies neutralize phage T7 infectivity.

Poster 35 – Alexis Page

Department: Biology

Advisor: Dr. Kimberly Carlson

Title: ***Production of ORF2
Monospecific Antisera***

Nora virus open reading frame 2 (ORF2) encodes the replicative proteins such as the RNA polymerase (RNAP) and helicase. The RNAP is of intense interest because it allows the virus to replicate its RNA. The purpose of this study was to express and purify the RNAP region of ORF2, and to produce monospecific antisera in mice against this protein. ORF2 RNAP was expressed, purified, and analyzed using SDS-PAGE. After batch expression and purification of ORF2 RNAP, it was injected into mice and blood serum containing the monospecific antibodies was collected. The resulting monospecific antiserum was validated with Western Blot. The production and validation of the monospecific antisera is a useful tool for characterizing the structure and function of ORF2 RNAP from Nora virus.

Poster 36 – Kari Page

Department: Biology

Advisor: Dr. Thomas Freeman

Title: ***Raccoon Visitation to Sherman
Traps: Those Containing Live Mice
vs. Those With Just Bait***

Raccoons (*Procyon lotor*) are considered a pest by many people, and this is no different for a lot of biologists, especially when it comes to trapping. Raccoons disturb traps and ruin results. Many are trying to find ways to keep the raccoons out of or away from the traps, but few experiments have been done on why raccoons are attracted. This experiment was performed at the Kearney Reservoir. It is to determine whether raccoons visit Sherman traps containing mice significantly more than those without mice. This is to help determine what attracts raccoons to traps and why they disturb them, which can cause results in experiments to be unusable. This experiment will use 5 Sherman traps per transect and 5 game cameras to monitor these traps. All of them will contain bait and one of them will contain a mouse. They will be monitored with video to determine which traps the raccoons visit and what they do there. It is predicted that the raccoons will visit the traps with mice significantly more, about 80% of the time. If the reasons they are attracted to traps is determined, then their disturbance of traps could possibly be reduced.

Poster 37 – Adrienne Pursley

Department: Biology

Advisor: Dr. William Hoback

Title: ***The Bigger They Are, The Harder Gravity Is On Them: An Examination of G-Force and Insect Survival***

Among other differences between vertebrates and invertebrates, the extent to which the two tolerate extreme gravitational forces differs greatly. The large forces generated by some insects, simply by jumping from leaf to leaf, would be lethal to any vertebrate. This experiment tested the range of survivable forces for insects, as well as how the size of an individual contributed to its survival. To test g-force tolerance, insects were spun in a centrifuge at intervals of increasing acceleration, until the organism was no longer living or was mortally injured. Tests were performed on fruit flies, *Drosophila melanogaster*, various sizes of house crickets, *Acheta domesticus*, mealworms, *Tenebrio molitor* and *Zophobas morio*, and Madagascar hissing cockroaches, *Gromphadorhina portentosa*. The tolerance of g-force ranged from more than 9,000 in fruit flies to about 1,400 in the largest hissing cockroaches. All insects that weighed more than 0.1 grams had similar tolerance of between 1,600 and 1,400 g-forces suggesting structural failure of intersegmental membranes resulted in mortality. These results show a constraint of insect size based on exoskeleton properties and are being developed as a laboratory exercise for biology and entomology classes.

Poster 38 – Ryan Sowle

Department: Biology

Advisor: Dr. Kimberly Carlson

Title: ***In Vitro Assembly Of Nora Virus Virus-Like Particles***

The Nora virus viral proteins (VP4a, b, c) are thought to be the major capsid components of the virus, making ORF4 of particular interest in how this virus assembles. For this study, virus-like particles (VLPs) of the Nora virus ORF 1, -3, -4a, -4b, and -4c proteins were assembled in vitro to determine the protein or proteins that are essential in assembling the virus capsid. VLPs or individual proteins were run through cesium chloride gradients and the viral proteins were detected in gradient fractions on Western blots. Electron microscopy of gradient-purified VLPs revealed a size distribution similar to that of wild-type virus when viral protein 4A is included with other viral proteins. VLP reactions that did not include VP4a, or assembly reactions that contained VP4a alone, resulted in scattered size distribution. These results suggest that VP4A may act as a nucleation protein for Nora virus assembly.

Chemistry

Poster 39 – Angela Bamesberger

Department: Chemistry

Advisor: Dr. Haishi Cao

Title: ***A Novel Fluorescent Approach for Detection of Fluoride in Aqueous Media with High Affinity***

A fluoride chemosensor (FCS-1) based on 1,8-naphthalimide bearing a

trimethylsilyl ether has been designed and synthesized. FSC-1 displayed high selectivity and sensitivity to fluoride in inorganic form (KF and NaF) with a short response time in the aqueous media.

Poster 40 – Tara Bjorklund

Department: Chemistry

Advisor: Dr. Amanda Glass

Title: ***Characterizing the Metal Binding and Stability of Peptide 1 from the Metal-binding Domain of Metallochaperone SlyD***

SlyD is a metallochaperone present in organisms that binds to nickel ions and transports them to nickel-iron hydrogenase, an enzyme that catalyzes the reversible oxidation of H₂ for cellular redox cycling. Metallochaperones sequester and protect reactive metal ions from binding in the wrong place in the cell, and ultimately deliver the ions to their partner metalloproteins via specific protein-protein interactions. A crucial question that remains unanswered about SlyD is what the specific metal ion binding sites within metalloprotein are; that is the focus of this work. We designed peptides derived from the sequence of the metal-binding domain (MBD) of SlyD as likely candidates for individual metal-binding sites. Peptide 1, DGCCGG, is the first of these MBD-derived peptides to be characterized. This research details the metal binding characteristics of this metal-peptide complex. Electronic absorption spectroscopy has been used to demonstrate a 1:1 binding ratio between the peptide and nickel. The stability of the nickel-peptide 1 complex has also been studied within different buffer solutions

over the course of several weeks. These data will provide insights into nickel binding within the full-length SlyD protein.

Poster 41 – Aspen Clements, Primary Presenter

Co-Presenter: Michael Hanrahan

Department: Chemistry

Advisor: Dr. Christopher Exstrom

Title: ***Nanocrystalline FeS₂ Prepared from Iron(III) N,N-Diethyldithiocarbamate***

Because of favorable optical absorption properties, high natural abundance, and extremely low extraction and processing costs, the semiconductor material iron pyrite (FeS₂) is being explored as a next-generation solar cell absorber material. The solvothermal synthesis method presents a potentially effective way to avoid costly high-vacuum manufacturing steps; however, surfactant solvents that are typically required to stabilize phase-pure nanoparticles form long-chain capping ligands that inhibit electronic conduction between particles. We have explored the solvothermal preparation of nanocrystalline FeS₂ at ambient pressure through the decomposition of iron(III) N,N-diethyldithiocarbamate in ethylene glycol, diethylene glycol, and triethylene glycol. Even though the starting complex is coordinatively saturated with sulfur, FeS₂ particles do not initially form upon decomposition. IR spectroscopy studies indicate that FeS particles form in diethylene glycol at temperatures as low as 120°C. The addition of a second sulfur source, thiourea, and further refluxing at 275°C resulted in the formation of marcasite FeS₂. Partial conversion to pyrite FeS₂ was achieved after annealing

dropcast product films at 450°C for 30 minutes in a sulfur atmosphere. Similar preparations of FeS₂ in analogous amine solvents are underway to determine if solvent basicity plays a role in the specific FeS₂ phase formation.

Poster 42 – Aspen Clements

Department: Chemistry

Advisor: Dr. Mahesh Pattabiraman

Title: ***Gamma Cyclodextrin Mediated Cross Photocyclication of Substituted Alkenes***

Steering photochemistry of alkenes towards photodimerization over the facile isomerization pathway is pursued for its potential in applied chemistry. γ -Cyclodextrin (γ -CD), a macrocyclic host composed of eight glucose units capable of simultaneously accommodating two small organic molecules, has been employed in the past to effect stereo- and regioselective photodimerization of alkenes in the solid state and solution phase. However, this strategy has been employed to achieve high yields of photodimerization between alkenes of the same species (homo-dimerization). The same has not been attempted for hetero-dimerization – photodimerization between two different alkenes. It is proposed that the cavity of γ -CD offers the confined nano-space conducive to achieve this. Preliminary studies based on the photochemistry of substituted cinnamic acids and coumarins have demonstrated the feasibility of this idea wherein heterodimer was formed in quantities significantly higher than the other products. In addition it is also proposed that by choosing hetero-alkene pairs capable of engaging in weak interactions

(such as charge transfer, hydrogen bonding), selectivity in favor of the hetero-dimer over the homo-dimer(s) could be realized. We intend to perform systematic studies to investigate possible correlation between the strength of weak interactions, and proportion of hetero-dimer in the product mixture.

Poster 43 – Emily Edwards

Department: Chemistry

Advisor: Dr. Amanda Glass

Title: ***Comparing the T_m of Myoglobin and Hemoglobin in Varying Solution pH***

Circular dichroism (CD) spectroscopy was used to monitor the stability of the two heme-containing oxygen binding proteins, hemoglobin and myoglobin. CD can be used for measuring the stability of a protein as a function of solution temperature. Presumably, the more weak interactions (e.g. hydrogen bonds, electrostatic attractions) a protein has, the higher its thermal stability, and the higher its T_m. We recently observed that equine myoglobin has a higher thermal stability than bovine hemoglobin, which was unexpected. It is known that the structures of hemoglobin and myoglobin are similar, but the former is tetrameric whereas the latter is monomeric. It would therefore be predicted that hemoglobin, with its four chains, would have a higher T_m than myoglobin, which only has one chain. However, we observed the opposite trend. The data presented herein serves to expand that data set and see if we observe this anomalous trend at a wider range of solution pH values, or if the trend returns to what would be

expected based on first looking at the structures of the two proteins.

Poster 44 – Haley Houtwed

Department: Chemistry

Advisor: Dr. Haishi Cao

Title: ***A Detection Method for Hydrogen Sulfide***

My project is to make a molecule that will detect for hydrogen sulfide in a living system. Hydrogen sulfide is present in the body at different levels in different systems. It helps prevent cell death and is has anti-inflammatory properties. Some researchers have also found that hydrogen sulfide has potential to help in the treatment of Alzheimer's and Parkinson's disease. This molecule will become fluorescent in the molecule in the presence of hydrogen sulfide.

Poster 45 – Bethany Lueck

Department: Chemistry

Advisor: Dr. Christopher Exstrom

Title: ***Kinetics of Gold Nanoparticle Synthesis Monitored by Raman Spectroscopy***

To control the size and shape of gold nanoparticles for biosensor applications, a detailed mechanistic understanding of nanoparticle formation that includes the kinetics of reactant depletion from solution is required. Traditionally, UV-vis absorption spectroscopy is used to monitor source gold complex (HAuCl₄) depletion from solution in the presence of a reducing agent. However, in-situ monitoring is impractical because the pH of reaction aliquots must be lowered to 1 in order to maximize the analyte peak signal at 314 nm. Raman spectroscopy

offers potential for more detailed depletion studies for both HAuCl₄ and reducing agent monitoring but traditional solution data collection techniques have poor reported sensitivities. In this work, we used confocal Raman microscopy with a shallow-well solution sample holder to simultaneously monitor HAuCl₄ and sodium oxalate depletion from aqueous solution in their reaction to form gold nanoparticles. No pH adjustments were required. The reaction proceeds in first order with respect to each species and the minimum concentrations detected were 100 times smaller than any previously reported Raman spectroscopy study of this type of reaction system.

Poster 46 – Jayne McGovern

Department: Chemistry

Advisor: Dr. Frank Kovacs

Title: ***Engineering and Characterization of a More Stable Ascorbate Peroxidase from *Panicum Virgatum* L***

Ascorbate peroxidase (APX) is an enzyme found in plants that protect them from oxidative stress. The enzyme works by catalyzing the transfer of electrons from ascorbate to hydrogen peroxide to make water and dehydroascorbate. The reactive oxygen species, hydrogen peroxide, is produced naturally in plants during photosynthesis and cellular metabolism. A more thermally stable APX enzyme could possibly be used in plants to better protect them from oxidative stress. The mutations were made using site-directed mutagenesis. The mutated and wild type protein were made and tested with an enzyme assay at room temperature (25°C) and at 50°C to test

the thermal stability of the enzyme. The M36C/A100C mutant shows less activity than wild type at room temperature with Kcat value of average of 209.73 ± 19.7 and 319.46 ± 2.09 . The M36C/A100C mutant also shows greater loss in activity at 50°C than wild type.

Poster 47 – Becky Svatora

Department: Chemistry

Advisor: Dr. Christopher Exstrom

Title: ***Films of Anisotropic Gold***

Nanoparticles Deposited using Chemisorption- and Physisorption-based Methods

Solution casting of gold nanoparticle films for biosensor devices generates less waste than vacuum-based evaporation and sputtering methods for gold film fabrication. Due to irregular surface shapes, the conditions for binding of anisotropic gold nanoparticles to substrates require optimization from procedures reported for the coating of small spherical nanoparticles on substrates. In this work, chemisorption techniques that involve the chemical binding of an intermediate thio- or aminosiloxane self-assembled monolayer (SAM) between the substrate and anisotropic gold nanoparticles (formed via the reduction of HAuCl₄ with sodium oxalate) were compared to layer-by-layer (LbL) physisorption techniques that rely on the static surface attraction between gold nanoparticles and poly(diallyldimethylammonium chloride)

Poster 48 – Ashley Larsen, Primary Presenter

Co-Presenter: Emily Kaslon

Department: Geography & Earth Sciences

Advisor: Dr. Jeremy Dillon

Title: ***Is the 'Loper Fan' a True Fan?***

In spite of the generally flat appearance of our campus, the USGS Kearney, Nebraska topographic map indicates that UNK's east campus is built on an alluvial fan that extends from the mouth of Lake Kearney to the residential neighborhoods south of Highway 30. According to the topographic map the relief between the top of the fan to its distal portions is approximately 30 feet. We used the UNK Geography Giddings Probe to obtain a 16-foot core sample near Cope Stadium, and our preliminary observations indicate no buried soils or bedding. Thus there is not an alluvial fan here. We are now going to collect 2-3 additional soil cores and conduct Soil Organic Matter analyses using the loss on ignition (LOI) method to test these observations quantitatively, and determine if the UNK campus really is built on an alluvial fan. Or, to determine if the 'Loper Fan' is a true fan.

Poster 49 – Tayler McPeak, Primary Presenter

Co-Presenters: Kyle Pohlman & Jacob Maurer

Department: Geography & Earth Sciences

Advisor: Dr. Vijendra Boken

Title: ***Water Usage in Nebraska's Agriculture***

Nebraska enjoys ample availability of water resources that supports both

irrigation and cattle growth and strengthens Nebraska's economy. In 2013, however, significant drop in ground water levels was reported. Considering the importance of water, it becomes necessary to examine how water usage for agriculture as well as cattle has varied over years. In this study we have provided this information which will be helpful to plan the best combination of crops as well as in maintaining an optimum population of cattle.

Mathematics

Poster 50 – Stephanie Smith

Department: Mathematics

Advisor: Dr. Jacob Weiss

Title: ***Differentiation on Different Time Scales***

In this project I learned about what Time Scales are and I attempted to find a function in which the derivative of the function is itself on different time scales. I then did the same for the nabla derivative. Time scales are the unification of difference equations and differential equations.

Physics & Physical Science

Poster 51 – Matthew Tenorio

Department: Physics & Physical Science

Advisor: Dr. Laura Wessels

Title: ***Baculovirus Fusion to Membrane***

Baculovirus is an enveloped virus. In order to enter the cell the membranes between a baculovirus particle and the cell must fuse together in a highly energetic process. The energy for this process is believed to come from proteins, like gp64, embedded in the viral membrane that move from a metastable conformation into a stable conformation, creating free energy that is large enough to separate membranes. All of this happens very quickly on submicroscopic scales. So this process has never been seen. Instead it is theorized based on other well-studied viral pathways and data from bulk experiments. In this single molecule experiment we attempt to characterize membrane fusion between a baculovirus particle and a lipid bilayer modelling a cell membrane by placing lipid florescent probes into the envelope of a baculovirus particle and watching those lipid probes diffuse into the bilayer.

Professional & Applied Studies

Communication Disorders

Poster 52 – Kaitlyn Liberty

Department: Communication Disorders

Advisor: Dr. Miechelle McKelvey

Title: ***Clinical Perceptions of AAC Assessment in Adults with Amyotrophic Lateral Sclerosis***

How SLPs arrive at conclusions during AAC assessments has not been widely examined. The purpose of this study was to examine how general practice SLPs approach the AAC assessment of adults with Amyotrophic Lateral Sclerosis (ALS). Four ASHA certified SLPs reviewed a case study and short video clip and provided their impressions of how they would approach assessment in the individual described within the case presentation material and video. This phenomenological study used qualitative data and employed an inductive in vivo coding analysis to derive themes from the data. Results yielded three major themes which included: (1) evaluation preparation; (2) area of assessment; and (3) method of assessment. These themes described the key areas of AAC assessment that general practice SLPs target. The results of this study add to the

body of literature that support evidence-based practice when conducting AAC assessments for individuals with ALS.

Poster 53 – Tessa Mannlein

Department: Communication Disorders

Advisor: Dr. Jan Moore

Title: ***Risk of Noise-Induced Sensorineural Hearing Loss to Parishioners Attending Christian Student Fellowship Services at the University of Nebraska Kearney***

We investigate if regular noise exposure at praise band worship services (such as Christian Student Fellowship services) causes temporary threshold shifts in hearing, suggesting that permanent hearing loss may result. Subjects' hearing is tested twice, where the first test is obtained prior to exposure to noise or loud music, and the second is obtained immediately after attending the CSF service. We compare the results of the two hearing tests for each subject to determine if there has been any change in hearing status.

Computer Science & Information Technology

Poster 54 – Ben Versaw

Department: Computer Science & Information Technology

Advisor: Dr. John Hastings

Title: ***Brain Computer Interfaces***

Research into the growing field of Brain Computer Interfaces (BCI) - using concentration, focus, and other emotions to control external devices such as computers.

Kinesiology & Sports Sciences

Poster 55 – Marissa Bongers

Department: Kinesiology & Sports Sciences

Advisor: Dr. Kate Heelan

Title: ***Evaluation of a Worksite Wellness Program Aimed at Healthy Living***

Wellness programs are designed to decrease healthcare expenses by increasing healthy behaviors of employees. Healthy workers tend to use less sick time and have decreased absenteeism (Cotman, 2002). The purpose of this research project is to evaluate the impact of an employee worksite wellness programs on body mass, fitness and health. Baseline data of blood pressure, cholesterol, body mass and fitness were collected on 33 participants (14 men and 19 women). City employees were encouraged to participate in fitness activities over twelve weeks. Points for weight-loss and participation in activities were awarded. 70% of the employees completed the Transform 2013 wellness program and attended 27% of the activity sessions. Evaluation of changes in body mass, fitness and health will be presented.

Poster 56 – Lindsey Eubanks

Department: Kinesiology & Sports Sciences

Advisor: Dr. Todd Bartee

Title: ***The Relationship between Distal Forearm Bone Mineral Density and Periodontal Disease***

Background: Women with osteoporosis are three times more likely to experience tooth loss than those whom do not. The purpose of this study was to determine the relationship between bone mineral density (BMD) of the distal forearm and periodontal disease among women.

Methods: 41 women, 19 years or older completed a nine-item self-report oral health questionnaire and a scan of the distal forearm was administered using dual energy x-ray absorptiometry to measure BMD. Results: Among participants, 39 of 41 reported less than 3 of 9 indicators of periodontal disease. A Spearman correlation coefficient was calculated for the relationship between BMD and oral health. A weak positive correlation that was not significant was found ($r(2) = 0.08$, $P > .05$). Discussion: Although these results show a weak correlation, further research should include a larger sample size to help insure greater variance of oral health status.

Poster 57 – Heidi Hostert

Department: Kinesiology & Sports Sciences

Advisor: Dr. Todd Bartee

Title: ***Is Worksite Wellness a Beneficial Business Decision?***

BACKGROUND: Employers are unlikely to offer worksite wellness programs solely

to improve employee health. PURPOSE: The purpose of this study was to identify reported benefits resulting from worksite wellness programs. METHODS: Nebraska-based worksite wellness resources were reviewed for benefits of worksite wellness programs. These reviews led to the identification of search terms that were used within LOPERsearch databases. Database searches related to absenteeism, morale, mental wellbeing, efficiency, productivity, health spending, as well as, names of identified worksite wellness researchers. RESULTS: Many benefits resulting from worksite wellness programs were reported including: lower medical costs, improved productivity, lower absenteeism, and better morale. Overall, findings suggest the benefits outweigh the costs, yielding a positive return on investment. CONCLUSION: Worksite wellness programs are worth the investment. Several program approaches can be used to achieve positive worksite wellness benefits. Future research should determine which strategies yield the most positive benefits.

Poster 58 – Danielle Perry, Primary Presenter

Co-Presenter: **Shelby Zimmerman**

Department: Kinesiology & Sports Sciences

Advisor: Dr. Kate Heelan

Title: ***Validation of Videography for Portion Size Estimation in a University Cafeteria***

Digital photography has been validated as a method to measure portion sizes and food intake in cafeteria settings (Williamson et al., 2003). However,

pictures capture only one-dimension, while videography provides both dynamic audio and visual elements. **PURPOSE:** To validate videography as a method for estimating unhealthy food portions consumed in a University cafeteria. **METHODS:** 66 student meals from 16 menus were video recorded with verbal portion size estimation and food description. Foods were subsequently weighed on a food scale. Food waste was assessed via digital pictures and weight. High fat (>5g/serving) and/or high calorie (>200kcal/serving) foods were identified as “red foods”. To test validity, portions of “red foods” were estimated through recorded videos and then compared to weighed portions using correlation coefficients and Bland-Altman regression. **RESULTS:** Videography and weighed portions were highly correlated ($r=0.88$, $p<0.05$) with no significant differences between portions (weighed - video = -0.12 ± 1.14 , $p=0.40$).

Poster 59 – Nicole Potthoff

Department: Kinesiology & Sports Sciences

Advisor: Dr. Bryce Abbey

Title: ***Strength and Comprehensiveness of Kearney Public Schools Wellness Policy***

In 2006, school districts across the United States were required to develop and implement a local school wellness policy (LSWP) in order to participate in the National School Lunch Program. A LSWP is designed to promote student wellness, fight childhood obesity, and insure that the food students are being served meets the federal standards. Policies will be coded using the quantitative assessment

tool called the WellSAT. It produces scores from 1 to 100 for both comprehensiveness and strength of the LSWP, as well as comprehensiveness and strength scores for the 5 individual sections. Each item is coded a 0, 1, or 2, where 0 represents no mention of the item, 1 represented mention of the item in weak or vague language, and 2 indicated a strong and specific policy. The research team will conduct a case study of the Kearney Public Schools wellness policy and evaluate it using the WellSAT.

Poster 60 – Bridgette Schneekloth

Department: Kinesiology & Sports Sciences

Advisor: Dr. Gregory Brown

Title: ***Kinect™ Zumba Fitness compared to Zumba Fitness with a Human Instructor for Physical Activity***

Using a physically active video game system as an alternative to a home exercise video presents an interesting opportunity for a person to engage in exercise in the privacy of his/her own home, yet still receive some feedback on the quality of his/her exercise performance. The purpose of this study was to compare the level of physical activity between those participating in a Zumba group exercise class and those using a Zumba exercise video game. Further expounding on data previously collected using adult women, college-aged students enrolled in a Zumba class at the University of Nebraska at Kearney were measured for heart rate, number of steps taken, and minutes of light, moderate, and vigorous physical activity as well as energy expenditure while

participating in a Zumba exercise class or while playing Zumba Fitness on the Xbox Kinect video game system. Data collection for this study is currently still in progress.

Poster 61 – Gavin Schneider

Department: Kinesiology & Sports Sciences

Advisor: Dr. Gregory Brown

Title: ***The Effects of a Caffeine-Containing Commercially Available Pre-Workout Supplement Versus an Energy Drink on Resistance Training Performance***

Caffeine is one of the main ingredients in many pre-workout drinks. It has been demonstrated that caffeine is effective in delaying fatigue during endurance activity. It has also been suggested that caffeine can increase strength and power performance by enhancing muscle contraction efficiency, although evidence substantiating this benefit during resistance exercise is limited. The effectiveness of two caffeine-containing commercially available pre-workout drinks on strength was studied in 10 male UNK students who do not participate in NCAA sports, but regularly participate in strength training. Each subject performed a one-repetition maximum (1-RM) lift on the bench press machine and leg press machine. Subjects performed a baseline 85% 1-RM until muscle fatigue. Subjects were then randomly assigned to consume a pre-workout placebo beverage (diet sprite and sugar free lemonade), a caffeine-containing pre-workout (Jack3d), or an energy drink (KickStart) 30 minutes before performing 85% of their 1-RM until muscle fatigue.

Poster 62 – Melissa Voichahoske

Department: Kinesiology & Sports Sciences

Advisor: Dr. Kate Heelan

Title: ***Cardiovascular Fitness in University of Nebraska at Kearney Exercise Science Students***

Twelve percent of all deaths within the United States are linked to physical inactivity (Laukkanen, 2001). Increasing energy expenditure, by the use of physical activity, by 1000 kcals per week can decrease mortality by 20% (Warburton, 2006). PURPOSE: To examine the cardiovascular fitness of University of Nebraska at Kearney's exercise science students over a five year time span. METHODS: As part of the exercise science curriculum, students complete a maximal graded exercise test using the Bruce Protocol and a Parvomedics TrueOne 2400 Metabolic Measurement System. This system is set to analyze the exchange ratio between oxygen consumption and carbon dioxide exhalation. The exchange ratio between oxygen and carbon dioxide then can be converted into absolute and relative maximal oxygen consumption (VO₂ Max) to determine cardiovascular fitness. Data will be analyzed to examine the trends in cardiovascular fitness levels in exercise science students over a five year time frame.

Poster 63 – Tricia Young, Primary Presenter

Co-Presenter: Ashley Pearson

Department: Kinesiology & Sports Sciences

Advisor: Dr. Gregory Brown

Title: ***Effects of Changes in Resting Metabolic Rate and Diet Due to Stress throughout a Semester of College***

College can be a stressful time for students, especially during times when there are many examinations and assignments. Stress levels increase particularly around midterms and finals week. With the increases in stress, students typically increase the amount of food they consume while reducing the quality of their food choices. These changes in food quality may affect the Resting Metabolic Rate (RMR). This study seeks to discern if changes in stress over the course of an academic semester influence RMR and dietary composition in male college students. College males between the ages 19-25 are being measured for RMR, Body Composition, and a three day diet analysis during the second week of classes, midterms and finals week. The data from these tests will be examined to see if any changes occur over the course of an academic semester. Data collection for this project is currently ongoing.

Poster 64 – Shelby Zimmerman, Primary Presenter

Co-Presenter: Danielle Perry

Department: Kinesiology & Sports Sciences

Advisor: Dr. Kate Heelan

Title: ***The Impact of Nutrition Point of Decision Prompts in a College Cafeteria***

Freshman weight gain may be attributed to campus cafeteria offerings (Brevard et al., 2005) and lack of nutritional labeling (Kolodinsky et al., 2007). PURPOSE: To determine if college students make healthier food choices in a cafeteria setting if foods are labeled based on the Stoplight Eating Plan. METHODS: Digital photography and videography were used to evaluate the foods chosen and consumed by 152 students during 5 lunch and 4 dinner. Education was then provided for one week in the cafeteria identifying individual foods with a red, yellow, or green label based on a modified Stoplight Eating Plan (Epstein, 1988). Lunch and dinner meals were again evaluated five days following while education was visible in the cafeteria for 139 students. Comparisons were then made between the number of green and red foods chosen and consumed between baseline and after nutrition education was provided.

Management

Poster 65 – Jordan Bloesser

Department: Management

Advisor: Dr. Jake Messersmith

Title: ***Internship Effectiveness***

Internship effectiveness is identified by both the student and participating business. A review of literature related to internship research concluded that the alignment of employer and student expectations result in positive internship experiences for all parties involved. Prior research has focused primarily on the student intern perspective; therefore, the need to analyze employer viewpoints has been established. This research project titled Internship Effectiveness, surveyed business owners who have previously engaged in internship programs. The response of these business owners offers insight to improve and refine the University's internship program and relationships with participating businesses. Moreover, comprehending the value businesses place on internship programs provides considerable insight for students seeking permanent employment. Overall, it is anticipated that businesses utilize internship programs as a way of evaluating an intern's potential to transform into a full-time employee.

Poster 66 – Brian Norman

Department: Management

Advisor: Dr. Michelle Fleig-Palmer

Title: ***An Application of the Rate of Adoption Theory Relevant to Personal Health Record Adoption***

The adoption and implementation of electronic health records has undergone extensive research over the previous years, however, little research has been completed in regards to the adoption and implementation of personal health records. It is estimated that there are between 100 and 200 personal health record systems in the United States currently, yet, approximately 10% of Americans use a personal health record to manage their personal health data. There are several well-known barriers to PHR implementation, although there is little information available that integrates said barriers with Rogers (2003) Attributes of Innovation and Rate of Adoption. This paper will examine the five attributes of innovation (relative advantage, compatibility, complexity, trial ability, and observability) and use the attributes in an attempt to identify factors contributing to the slow rate of PHR adoption. It is my belief that PHRs have the potential to transform the way that individuals perceive their health while also helping to reduce long-term healthcare costs.

Poster 67 – Yi Zhao

Department: Management

Advisor: Dr. Michelle Fleig-Palmer

Title: ***An Evaluation of Performance Appraisals in the U.S. and China and Recommendations for Multinational Businesses***

Research shows the five main purposes in performance appraisal (PA) evaluation are documentation, development, administrative pay, administrative promotion and subordinate expression. These five purposes are viewed differently in the U.S. and China regarding expectations and actual practice. My research reviews PA documents and analyzes the PA process for public sector employees in the two countries to identify the differences in PA. There will be an integration of assumptions of the principal and agent relationship regarding people's economic behavior, as well as some items from the Hofstede's cultural dimensions theory. Also, the principal-agent theory, stewardship theory, and cultural dimensions will help to explain and better understand the differences in PA between the U.S. and China. The research results from the public sector document review will provide suitable suggestions to guide managers in multinational businesses in the U.S. and China.

Marketing

Poster 68 – Sarah Ahrens

Department: Marketing

Advisor: Dr. Heather Schulz

Title: ***Examination of Materialism within the Brand Community Framework***

Brand community research continues to be a vital component of understanding consumer behavior. Overlapping analyses have become increasingly helpful in understanding the social and interpersonal implications of brand communities. Measuring materialism and observing the effects of this value within brand communities is one new way the connection between those two values may be evaluated. The goal of this research is to shape an understanding of how materialism plays an active role within the membership and functioning of brand communities, through examining individuals' self-concepts and consumption habits.

Graduate Studies

Biology

Poster 69 – Adrienne Conley

Department: Biology

Advisor: Dr. Wyatt Hoback

Title: ***Trap and Relocate for Burying Beetles (Coleoptera: Silphidae: *Nicrophorus* spp.) and its Implications for Conservation of the American Burying Beetle (*Nicrophorus Americanus*)***

Mark and recapture has been used for population and survival estimates for many types of organisms. Relocation of rare or nuisance species has also been used as a conservation technique for multiple organisms including birds and mammals, but has not been thoroughly studied for insects. The American burying beetle, *Nicrophorus Americanus*, is a federally endangered insect that is a habitat generalist, occurring in undisturbed areas of six U.S. states. We tested trap and relocate using a closely related burying beetle species, *N. marginatus*. During 2012 and 2013, 28,985 beetles were marked, relocated, and released with 1,479 beetles recaptured (5.1% recapture rate). Comparisons among three treatments (re-captures at control sites, locations where beetles were moved from, and destination sites) showed no detrimental impacts by capturing and relocating these beetles. Trapping and relocating

American burying beetles can be used as a conservation measure when large areas of habitat will be disturbed.

Poster 70 – Jeremy Grauf

Department: Biology

Advisor: Dr. Wyatt Hoback

Title: ***Culverts on a Low Gradient Nebraska Stream Do Not Impair Fish Abundance or Diversity***

Culverts alter stream morphology and potentially affect local fish abundance and diversity. This study surveyed six culverts and two bridges in the South Loup River Watershed, NE, and used backpack electrofishing to sample fish diversity and abundance. Pipe culvert water velocity was high compared to double-barrel pipe culverts and bridges (ANOVA, $p < 0.01$), and pools were larger and deeper (ANOVA, $p = 0.02$) downstream of culverts compared to bridges. Fish diversity and abundance were similar below and above all structures. However, downstream of culverts had higher abundance of non-native species (ANOVA, $p = 0.03$). Large plunge pools and increased water velocity created by culverts likely influenced the abundance of non-native fish species. Larger sample sizes and randomization is needed to copiously determine the effects of culverts on prairie stream fish abundance and diversity; however the problems associated with culverts noted in more mountainous regions are not apparent in the plains.

Poster 71 – Erik Prenosil

Department: Biology

Advisor: Dr. Wyatt Hoback

Title: ***Swimming and Jumping Performance of Ten Nebraska Stream Fish***

Stream fragmentation can be detrimental to lotic fish species by preventing movements important for spawning and predator avoidance and possibly resulting in extirpation from some stream reaches. To determine if structures associated with road crossings are a barrier to fish movement, we tested the swimming and jumping ability of ten common stream fish: plains topminnow (*Fundulus sciadicus*), western mosquitofish (*Gambusia affinis*), northern plains killifish (*Fundulus kansae*), sand shiner (*Notropis stramineus*), red shiner (*Cyprinella lutrensis*), channel catfish (*Ictalurus punctatus*), black bullhead (*Ameiurus melas*), bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*) and largemouth bass (*Micropterus salmoides*). Fish tested were between 30 and 100 millimeters total length. An artificial waterfall with an adjustable weir was used to test jumping performance and a ten liter swim tunnel was used to test swimming performance. Jumping ability ranged from 0 for bluegill to 13 centimeters for green sunfish while swimming ability ranged from 37.5 cm/s for mosquitofish to 65.0 cm/s for largemouth bass. Differences in swimming and jumping ability demonstrate how movement through road crossing structures can be taxa specific and therefore impact the conservation of rare species and management of exotic species.

Poster 72 – Zachariah Woiak, Primary Presenter

Co-Presenters –

**Dr. Casey Schoenebeck,
Dr. Keith Koupal, Dr. Kim Carlson**

Department: Biology

Advisor: Dr. Casey Schoenebeck

Title: ***The Impacts of Ontogenetic Diet Shifts on the Growth Potential of Age-0 Walleye***

Age-0 walleye *Sander vitreus* experience ontogenetic diet shifts during their first growing season to maximize energetic returns and increase growth potential. Age-0 walleye that become piscivorous earlier in the growing season likely experience higher growth rates than those that do not, which implies an increased probability of over-winter survival and successful recruitment to the fishery. We investigated the underlying energetic factors and benefits of these ontogenetic diet shifts using a combination of RNA:DNA ratios and stable isotope analyses within Harlan County Reservoir, NE. Interestingly, age-0 walleyes shifted directly from zooplankton to piscivory at an average length of 90 mm. Growth potential of the age-0 walleye continually increased throughout their first growing season and was positively correlated with walleye length ($R^2 = 0.94$). In addition, after a diet shift from zooplankton to piscivory, growth potential significantly increased ($t = -3.30$, $df = 40$, $P = 0.002$).

Counseling & School Psychology

Poster 73 – Daphne Darter

Department: Counseling & School Psychology

Advisor: Dr. Tammi Ohmstede

Title: ***Using English Language Proficiency and Measure of Academic Progress (MAP) as Predictors of State Assessment in Reading Among Students from Low SES***

Schools are required to meet state curriculum standards. In 2001, the legislation of the No Child Left Behind Act of 2001 (NCLB) marked a shift in education policy. The NCLB mandates state education department to set proficiency standards in the areas of reading and mathematics that schools are to meet by the year 2014. Dee and Jacob (2010) posit that the hallmark features of NCLB have “compelled states to conduct annual student assessments linked to state standards, to identify schools that failing to make adequate yearly progress (AYP), and to institute sanctions and rewards based on each school’s AYP status” (p. 149). These standards have been created with a particular focus on students who have been historically disadvantaged or overlooked which is specifically central to the content of this study. Historically disadvantaged groups include families that exist below the national poverty level and minority groups; specifically in this study, the English language learners (ELL). NCLB legislation specifically

addresses the goal of helping these disadvantaged students. This poster presents the findings of a study that examined the efficacy of English language proficiency and MAP reading in predicting state NeSA reading among upper elementary grade students from low SES families. The research hypotheses are: (a) There will be a positive correlation between MAP reading and NeSA reading; (b) Non-ELL students will score higher on the NeSA reading than ELL students; and (c) The combination of MAP reading and English language proficiency will be a stronger predictor of NeSA reading.

Poster 74 – Carly Jones, Primary Presenter

Co-Presenters -- Hillary Veerhusen, Connie Rocker, Kelsey Rocker, Shellee Becker

Department: Counseling & School Psychology

Advisor: Dr. Tammi Ohmstede

Title: ***Summer Sustainability of Academic Achievement among Fourth and Fifth Grade***

Schools often turn to summer school programs as a way to sustain academic achievement when performance on high stakes tests are low. Presenters will share results to show summer school helped sustain academic scores from spring to fall. Practitioners will learn how summer school can prevent academic score slippage.

Poster 75 – Cesia Roche

Department: Counseling & School
Psychology

Advisor: Dr. Mitch Vaterlaus

Title: ***One Woman's Digital Experience***

Interactive technology (e.g., cellphones, internet) is becoming part of our everyday lives and research is beginning to identify that interactive technology use can differ within age groups and gender. Women have been socialized away from careers that involve technology use and underreport their ability to use technology. A qualitative case study approach was used with this study to capture one woman's lived experience with interactive technology. An individual semi-structured interview was conducted with a 30 year old, Caucasian woman living in the Midwest to learn more about her experience with technology. This woman was raised in the foster care system. The case study explored her experience with technology in the foster care system, as an adult, and in her current family. This is an important first step in learning more about women's technological experiences that were raised in diverse family configurations.

**Poster 76 – Jenna Rycek, Primary
Presenter**

**Co-Presenters -- Marissa McCloud,
Christa Anderson, Doris Younes and
Jessica Spors**

Department: Counseling & School
Psychology

Advisor: Dr. Tammi Ohmstede

Title: ***Si se puede...The Efficacy of
Dual Language Instruction***

This presentation focuses on one district's intervention program addressing Dual Language Learners (DLL). Attendees can expect to gain knowledge and awareness of the efficacy of a dual language program as it addresses the district's development of CALP, fluency in two languages (English and Spanish) while maintaining progress toward meeting AYP.

**Poster 77 – Hannah Vontz, Primary
Presenter**

**Co-Presenters -- Ramesh Neupane,
Sara Nelson, Jennie Ramsay**

Department: Counseling & School
Psychology

Advisors: Dr. Douglas Tillman &
Dr. David Hof

Title: ***A Night Without A Home***

This poster presentation details organizational steps for and outcome data about a collaborative event by counselor education students and community partners to enhance engagement between counselors and the community with regard to advocacy initiatives for the homeless population. The event, which coincided with National Hunger & Homelessness Awareness Week and the National Student

Campaign Against Hunger & Homelessness, included a participatory “Night Without A Home” simulation experience of homelessness, speakers on homelessness and hunger from national and local levels, and sharing of personal experiences about both setbacks and triumphs from individuals who have experienced homelessness. Outcome data on the impact of the event on participant attitudes and opinions about homelessness will be shared as well as the impact on Chi Sigma Iota chapter members involved in collaborating with community partners to organize the event. Poster format will include pictures and an interactive I-Pad experience.

Kinesiology & Sports Sciences

Poster 78 – Kate Hannon

Department: Kinesiology & Sports Sciences

Advisor: Dr. Kate Heelan

Title: ***Changes in Obesity Prevalence among Kindergarten Students***

National initiatives have drawn attention to childhood obesity among 2-5 year old children by building awareness and creating standards. Between 2008-2011 a small, but significant, decline in obesity among low-income preschoolers was found in 19 of 43 US states (May, et al., MMWR 2013). PUPROSE: To evaluate the prevalence of obesity among children entering school from 2008-2013 in Kearney Nebraska. METHODS: Body mass and stature were measured on a sample of 2,683 kindergarten students, age 6.01 ± 0.1 years, enrolled in Kearney Public School between the years 2008 and 2013. BMI percentiles were calculated using the gender specific BMI-for-age percentiles (CDC). RESULTS: In 2008, 14.0% of children enrolling in kindergarten were obese. In 2013, the prevalence of obesity decreased to 7.06%.

Poster 79 – Mitchell Sasek

Co-Presenter: Brook Wolfe

Department: Kinesiology & Sports
Sciences

Advisor: Dr. Zainab Rida

Title: ***The Impact of Team Nutrition
Curriculum on Third Grade Students
in Emerson Elementary School***

Childhood obesity has more than doubled in children in the past 30 year (U.S. Department of Health and Human Services, 2012). Children who are obese are more likely to develop diabetes, cardiovascular disease, and several types of cancer (Office of Surgeon General, 2010). Previous research has found nutrition programs are an effective intervention to increase youth's nutrition knowledge (Katz et al. 2011, Wall et al. 2012). PURPOSE: To determine the effectiveness of a modified nutrition educational program in 3rd grade students. METHODS: 3rd grade students from Emerson Elementary School will be taught five different lessons from a combination of USDA's Team Nutrition and University of Nebraska at Lincoln's extension, school enrichment kit. Pre and post evaluation tests will be taken by each participant during the first and last lesson respectively. The current curriculum will be evaluated against the pre and post evaluation results from UNL Extension curriculum.

Performance Schedule

Sandhills Room

1:30 – 1:50 pm Daniel Gibbs: *The Music of the Great Plains*

Performance Abstract

Music & Performing Arts

Daniel Gibbs – Presenter

Department: Music & Performing Arts

Advisor: Dr. Darleen Mitchell

Title: ***The Music of the Great Plains Indians***

The focus of this project is on ethnic folk music specific to the Great Plains Native Americans. My research has included viewing presentations of Native American music, and studying the elements of Native American music of the Great Plains. My project includes an original composition based on these elements. It features techniques, rhythmic motives from Native American songs, texts based on Native American prayers and rituals, and a Native American flute. This piece will be performed live and recorded for documentation at my senior composition recital April 12th. This presentation will include basics about the Great Plains Indians and what is typical in their music as well as a performance of the piece I composed.

Oral Presentation Schedule

Room: Ponderosa C

- 1:30 pm ---- **A. Donovan:** *Using Gas Chromatography Paired with Mass Specometry to Detect Atrazine in Target Soil Samples*
(Advisor – Dr. Moser)
- 1:45 pm ---- **A. Blair:** *Atrazine Degradation Products* (Advisor – Dr. Moser)
- 2:00 pm ---- **B. Adams:** *Mammal Distribution in Oklahoma and Kansas*
(Advisors – Dr. Geluso)
- 2:15 pm ---- **R. Pawlak:** *Characterizing the Abiotic and Biotic Components of Nebraska Interstate-80 Lakes: Implications for Growth of Stocked Fish Populations* (Advisor – Dr. Schoenebeck)
- 2:30 pm ---- **S. Smith:** *Observations of Suspected RR Lyrae Variable Stars* (Advisor – Dr. Powell)
- 2:45 pm ---- **C. Schwaderer:** *Assessment of Emergency Readiness and Delivery of Athletic Healthcare at Nebraska High Schools*
(Advisor Dr. Unruh)
- 3:00 pm ---- **E. Engelhaupt:** *EMT's Readiness to Participate in the Delivery of Athletic Health Care at Nebraska High Schools*
(Advisor – Dr. Unruh)
- 3:15 pm ---- **N. Hall:** *Music in Shakespearean Theater* (Advisor – Dr. Tassi)

Oral Presentation Schedule

Room: Ponderosa D

- 1:30 pm ---- **N. Pribnow:** *The Benefit of Biofeedback for Optimal Music Performance* (Advisor – Dr. Cisler)
- 1:45 pm ---- **J. Hess:** *Evaluating Different Forms of Police Interrogation Evidence* (Advisor – Dr. Forrest)
- 2:00 pm ---- **B. Carman:** *The Effects of Law and Order on Perceptions of Police Interrogations* (Advisor – Dr. Forrest)
- 2:15 pm ---- **A. Guthrie:** *The Effects of Ego Depletion on Moral Decision Making* (Advisor – Dr. Miller)
- 2:30 pm ---- **T. McConville:** *J.E.B. - Java Electronic Butler* (Advisor – Dr. Harms)
- 3:15 pm ---- **J.P. Lempke:** *Composition of an Oratorio* (Advisor – Dr. Mitchell)

Oral Presentation Schedule

Room: NSU 310

- 1:45 pm **K. Carder:** *Travel and Foreign Policy Attitudes* (Advisor - Dr. Machida)
- 2:00 pm ---- **J. Osborn:** *The Politics of Prohibition: How Colorado Legalized Cannabis* (Advisor – Dr. Aviles)
- 2:15 pm ---- **S. Perez-Zamarripa:** *Racial Diversity: Impairment or Improvement on Social Capital?* (Advisor – Dr. Blauwkamp)
- 2:30 pm ---- **W. Pettit:** *The Military Industrial Complex in a Post-Cold War World: A Comparative Case Study Analysis of the F-22 and F-35* (Advisor – Dr. Rowling)
- 2:45 pm ---- **P. McCue** *Brazil and Globalization* (Advisor – Dr. Rowling)
- 3:00 pm ---- **S. Holtman:** *The Efficacy of the Fair Trade Business Model* (Advisor – Dr. Machida)
- 3:15 pm ---- **K. Kalkowski:** *Risky Sexual Behavior: A Retrospective Study of Adolescent Parenting, and Drug and Alcohol Use* (Advisor – Dr. Asay)

Oral Presentation Schedule

Room: NSU 312

- 1:30 pm ---- **S. Stubbs:** *'Gentle River Goes Mad': The Republican River Flood of 1935 and the Legacy Left Behind* (Advisor – Dr. Ellis)
- 1:45 pm ---- **B. Musil:** *Righteous Reprobation* (Advisor – Dr. Rohrer)
- 2:00 pm ---- **M. Veburg:** *Carrying On: Wartime Experience of One Nebraska Family* (Advisor – Dr. Volpe)
- 2:15 pm ---- **J. Zyla:** *World Englishes Theory in the Classroom: Bridging the Gap between Theory and Practice* (Advisor – Dr. Ray)
- 2:30 pm ---- **K. Stones:** *Peter Pan: Death in Children's Literature* (Advisor – Dr. Beissel-Heath)
- 2:45 pm ---- **L. Shoemaker:** *Comparing the Effects of Traditional Dialogic Reading and Music-Enhanced Dialogic Reading on Language Production and Comprehension of Preschool Children with Language Impairment* (Advisor – Dr. Crowe)
- 3:00 pm ---- **D. Gonzales:** *The Figuration of the Artist in the Poetry of Lord Alfred Tennyson* (Advisor – Dr. Umland)
- 3:15 pm ---- **M. Stuart:** *An Analysis of Praxis II Preparation* (Advisor – Dr. Jochum)

Oral Presentation Abstracts

Biology

Presenter – Brittney Adams

Co-Presenter: Cody Dreier

Department: Biology

Advisor: Dr. Keith Geluso

Title: ***Mammal Distribution in
Oklahoma and Kansas***

Distribution edges of mammals are not static but fluctuate due to habitat changes, human influences, climate change, under sampling, and use of novel survey techniques. We employed various techniques to search for mammals in western Oklahoma and southwestern Kansas for four days including driving roads, deploying Sherman traps, burying pitfalls, setting mist nets, checking discarded bottles, examining owl pellets, as well as capitalizing on opportunistic observations. At least eight new records for mammals were discovered in the area, including a state record for Crawford's desert shrews (*Notiosorex crawfordi*) in Kansas. Other records included county records for eastern fox squirrels (*Sciurus niger*), nine-banded

armadillo (*Dasypus novemcinctus*), and beaver (*Castor canadensis*) in Kansas, as well as the westernmost record of fox squirrels in Oklahoma and records of the western pipistrelle (*Parastrellus hesperus*), in the Oklahoma panhandle. Currently, we are examining owl pellets from the region and expect to document even more mammalian records.

Chemistry

Presenter – Alyssa Blair

Department: Chemistry

Advisor: Dr. Annette Moser

Title: ***Atrazine Degradation Products***

Atrazine is one of the most commonly used herbicides and is a common contaminant in agricultural runoff. The presence of an atrazine degradation product was thought to be in Red-winged Blackbird (*Agelaius phoeniceus*) eggs collected in south-central Nebraska from a previous research project. For this project, QuEChERS (Quick, Easy, Cheap, Effective, Rugged, Safe) extraction of egg samples and gas chromatography combined with mass spectrometry (GC-MS) were used to identify and verify the existence of atrazine degradation products in the avian eggs. Samples of common degradation products of atrazine were run on the GC-MS to verify its separation conditions. Spiked chicken egg samples were then ran on the GC-MS and compared to the common degradation products. From this project, it was determined that atrazine degradation products are not in the Red-

winged Blackbird eggs found in south-central Nebraska.

Presenter – Anthony Donovan

Department: Chemistry

Advisor: Dr. Annette Moser

Title: ***Using Gas Chromatography Paired with Mass Specometry to Detect Atrazine in Target Soil Samples***

Analytical methods were developed to determine if atrazine was present in a target soil sample. Soil samples were processed using microwave assisted extraction and analyzed by gas chromatography paired with mass spectrometry. Atrazine D-5 was used as an internal standard. The calibration curve for two different soil samples was produced to test the effectiveness of the method, reporting a moderate clay sample as well as a rich organic matter soil type from concentration ranges from 1 to 50ug/kg.

Computer Science & Information Technology

Presenter – Tyler McConville

Department: Computer Science and Information Technology

Advisor: Dr. Sherri Harms

Title: ***J.E.B. - Java Electronic Butler***

This research involves creating a computer application that implements speech recognition and speech synthesis (“text to speech”) libraries in

order to facilitate the execution of pre-defined tasks. The application works with multiple third-party APIs (application programming interfaces) in order to carry these tasks out. One projected use for the application is to run in a person’s house. No matter what room of the house the user is in, he or she will be able to give commands to and interact with the program. This could allow the user to, for example, change the station on his or her television while washing dishes. The first phase of the project yielded a prototype system that listens for voice commands to demonstrate the automated completion of two different tasks: turning on a light bulb and checking upcoming weather conditions.

English

Presenter – Darrin Gonzales

Department: English

Advisor: Dr. Rebecca Umland

Title: ***The Figuration of the Artist in the Poetry of Lord Alfred Tennyson***

Lord Alfred Tennyson was one of the most important poets of the Victorian Era. In an exploration of his genius, this project seeks to discover the identity, figuration, and function of the artist in art through critical review of some of his most important works such as Ulysses, The Lotos-Eaters, In Memoriam, The Idylls of the King, and Merlin and the Gleam.

Presenter – Natalie Hall

Department: English

Advisor: Dr. Marguerite Tassi

Title: ***Music in Shakespearean Theater***

The focus of this research project is the function of music in William Shakespeare's plays. During his lifetime Shakespeare authored 38 plays, all of which are literary masterpieces. Although not a significant presence in Shakespeare's original stage cues, music was an essential element in the original productions of these plays, and many subtle musical references are imbedded within the text of the plays. In this project the following texts were studied: Hamlet, a tragedy; The Tempest, a romance; Twelfth Night, a comedy; and A Midsummer Night's Dream, also a comedy. This presentation will highlight the various ways in which music develops and explains some of the prominent relationships within these texts.

Presenter – Kevin Stones

Department: English

Advisor: Dr. Michelle Beissel-Heath

Title: ***Peter Pan: Death in Children's Literature***

Death has often been a taboo topic for children's literature, so I found it necessary to explore the psychological aspects behind death and its effect on the child psyche. When determining which literature to analyze, Peter Pan immediately sprang to mind; he is, after all, the boy who never grows up. Throughout the text, I marked each instance of death and deduced the

character's physical and emotional reactions. After researching Victorian era literature, I deduced that death was not taboo for Victorian-age children's literature because of its probability. Death was presented in literature to make children accustomed to the idea of death, but as child death rates dropped, death as a topic began to shift toward taboo. It is that shift that could explain the fear we develop toward death and why it is essential to understand the role death serves in literature. Death need not be taboo, and it may be children who show that to us.

Family Studies & Interior Design

Presenter – Kami Kalkowski

Department: Family Studies & Interior Design

Advisor: Dr. Sylvia Asay

Title: ***Risky Sexual Behavior: A Retrospective Study of Adolescent Parenting, and Drug and Alcohol Use***

Risky sexual behaviors and alcohol and drug use have been, and remain, a concern throughout the United States. Research has shown that there is a strong association between parental monitoring, communication and support with adolescent risky sexual behaviors and drug and alcohol use. This retrospective study surveyed young adults aged 19-24. The survey gathered information regarding parental monitoring, communication and support, and the influence they have on

adolescent risky sexual behaviors and drug and alcohol use. The results show that while a mother's and a father's monitoring, communication and support have an impact on adolescent behavior, a father's monitoring, communication and support has more of an impact on behavior during the adolescent years, especially for female adolescents.

History

Presenter – Megan Veburg

Department: History

Advisor: Dr. Vernon Volpe

Title: ***Carrying On: Wartime Experience of One Nebraska Family***

World War II is considered by many historians to be a fulcrum of American and World history. What occurred in the six years between 1939 and 1945 altered the globe. Domestically, Americans encountered social change on a large scale, in areas including the workforce, home, education, and economy. To date, however, scholarship concerning the home front is of a smaller volume than other aspects. Even less has been done on Nebraska, specifically. Midwestern areas like Nebraska were not shipbuilding centers and did not have large cities where soldiers and sailors departed for new corners of the world. The Great Plains was not untouched, but some families in essence carried on as they had. A collection of letters from the Veburgs, a family of farmers residing outside of the small Nebraska town of Hordville,

illustrates that life changed for those who left, but remained much the same for those who stayed.

Kinesiology & Sports Sciences

Presenter – Erica Engelhaupt

Department: Kinesiology and Sports Sciences

Advisor: Dr. Scott Unruh

Title: ***EMT's Readiness to Participate in the Delivery of Athletic Health care at Nebraska High Schools***

Description: A growing concern is the availability of athletic health care at high schools. Athletic health care services are influenced by school administrators, athletic directors, coaches, athletic trainers, and other staff. This research is designed to assess Emergency Medical Services role in providing care to Nebraska high school athletes. Purpose: To examine the knowledge, readiness, and availability of Emergency Medical Services to provide athletic health care to Nebraska high schools. Methods: A survey will be administered online using Qualtrics which will be distributed to Nebraska EMS personnel. Qualtrics will also be used for the data collection and review. The results of the study will provide an overview of the availability of health care in Nebraska schools and provide directive towards improvement of care.

Presenter – Chris Schwaderer

Department: Kinesiology and Sports Sciences

Advisor: Dr. Scott Unruh

Title: ***Assessment of Emergency Readiness and Delivery of Athletic Healthcare at Nebraska High Schools***

Healthcare for high school athletes is something that at times may be overlooked. This project surveyed all of Nebraska high school administrators, principals, activity directors, and coaches to determine how well prepared schools were to provide emergency and daily sports related healthcare to their athletes. Schools were asked about availability of equipment, readiness of coaching staff, and availability of medical professionals for athletic emergencies, to include heat stroke and cardiac emergencies. Availability or existence of emergency action plans was also looked at, as these are extremely important in the delivery of healthcare by those on site as well as emergency personnel that may be called. Our goal was to make these determinations in hope of eventually increasing the availability and efficiency of high school athletic healthcare.

Modern Languages

Presenter – Mary Stuart

Department: Modern Languages

Advisor: Dr. Chris Jochum

Title: ***An Analysis of Praxis II Preparation***

Starting in August of 2014, Nebraska will become one of the final states to require the PRAXIS II (content-based) test in order to receive teaching licensure in all subject areas. This means that starting next fall, all current education majors that attend the University of Nebraska at Kearney will be required to take the Praxis II before receiving their teaching licensure. The purpose of my study is to assess current student teachers' knowledge in regards to the Praxis II and to help them become more aware and informed of the content and background information surrounding the test.

Music & Performing Arts

Presenter – John Paul Lempke

Department: Music & Performing Arts

Advisor: Dr. Darleen Mitchell

Title: ***Composition of an Oratorio***

An oratorio is a large work designed for choir with orchestra and centered around a common theme. Usually devoid of a plot, props, and stage set-up, it nevertheless compares to an opera in size and scope, even if lacking theatrics. My project involved my step-

by-step process of creating a fourteen-movement oratorio based on Alfred Tennyson's *Idylls of the King*. The piece is non-tonal, conveying brightness and openness in some movements, but balanced by dissonance in others, depending on interval choice. The main challenge behind an oratorio, though, is orchestration. While I've read Rimsky-Korsakov's *Principles of Orchestration* along with David Cope's *New Music Composition*, my ability to manipulate the sound of a large ensemble like an orchestra, I soon found out, only came through my own careful consideration of tone color, balance, and practicality. Essentially, my project involves the journey from idea, to rough sketch, to orchestra.

Presenter – Nolan Pribnow

Department: Music & Performing Arts

Advisor: Dr. Valerie Cisler

Title: ***The Benefit of Biofeedback for Optimal Music Performance***

In recent years, much effort and research has been put into the anatomical studies of performing musicians. Performers and pedagogues worldwide have been trying to discover the answer to music related musculoskeletal injuries such as: carpal tunnel syndrome; tendonitis of the arms and elbows; and focal hand dystonia. Last year the Department of Music and Performing Arts at UNK purchased the Proforma Vision sEMG biofeedback technology. This equipment measures and provides immediate visual feedback of muscle activity a musician uses while performing through the use of surface magnetic electrodes. The project

included testing four music majors three times on their principal instrument using the Proforma Vision sEMG biofeedback technology. The purpose of this study was to discover if subjects could improve muscle use and physical awareness through the use of this equipment.

Physics

Presenter – Stephanie Smith

Department: Physics

Advisor: Dr. William Powell

Title: ***Observations of Suspected RR Lyrae Variable Stars***

Our group is working on confirming variability of suspected RR Lyrae variables we have identified, and making follow-up observations of confirmed new variables. We developed a new method of detecting RR Lyrae variable stars using only a single epoch of both photometry and spectroscopy taken from the Sloan Digital Sky Survey (SDSS). This method takes advantage of clear departures from the template norm for stars that have photometry and spectroscopy taken out of phase. Over 1,000 stars have been identified as probable RR Lyrae stars, scattered across the halo and ranging from 1th to 20th magnitude. This paper describes observations taken at McDonald Observatory by undergraduate students as part of this project. We will discuss how and why the method works, and our McDonald observations to confirm variability and obtain full light curves.

Political Science

Presenter – Kevin Carder

Department: Political Science

Advisor: Dr. Satoshi Machida

Title: ***Travel and Foreign Policy Attitudes***

This study examines how traveling affects attitudes about foreign policy issues. Using data from a survey of about 1000 adults living in the US, I explore how opinions on issues like foreign aid, trade, and use of military force are influenced by exposure to and interaction with people of other cultures and nationalities. I find that, for certain policy issues, more travel experience translates into a more internationalist and/or less militant attitude.

Presenter – Stephanie Holtman

Department: Political Science

Advisor: Dr. Satoshi Machida

Title: ***The Efficacy of the Fair Trade Business Model***

My research project attempts to bridge the gap in understanding between consumers and a product that seems a part of daily life but is a vastly misunderstood: coffee. Through on-site, survey, and traditional research, I delve into the business practices and political and social effects of traditional, specialty, and Fair Trade-certified coffee, in an effort to paint a sobering picture of this enormously profitable and seemingly untouchable commodity.

Presenter – Patrick McCue

Department: Political Science

Advisor: Dr. Charles Rowling

Title: ***Brazil and Globalization***

This project was to delve into the topic of globalization with the specific focus on Brazil. It examines first the theoretical framework along with general scenarios of globalization and proceeds to compare it to the specific situations and events occurring in Brazil. The project then culminates in an evaluation of successes and failures globalization poses to the world in certain aspects based on Brazil's experience and how its reactions to globalization have played out.

Presenter – Jackson Osborn

Department: Political Science

Advisor: Dr. William Aviles

Title: ***The Politics of Prohibition: How Colorado Legalized Cannabis***

Over the past 80 years Cannabis sativa (more commonly referred to as marijuana) has been the subject of an ongoing moral debate, experienced a multitude of changes in its legal status and maintained a constant presence as the most widely used illicit substance. A federal prohibition of cannabis has been established in the United States since 1937. Despite staunch opposition from the federal government, twenty states and the District of Columbia have legalized cannabis for medicinal purposes within the past twenty years. In 2012, Colorado and Washington became the first two states to legalize the recreational use of marijuana. Events preceding state reform of

cannabis laws have undermined the legitimacy of this prohibition, making change possible. These developments are illustrated through an analysis of the campaign for reform in Colorado.

Presenter – Stefani Perez-Zamarripa

Department: Political Science

Advisor: Dr. Joan Blauwkamp

Title: ***Racial Diversity: Impairment or Improvement on Social Capital?***

In countries like the United States, racial diversity is the norm. After all, the U.S. is a “melting pot” of different cultures coming together in unity. Thus those who live in the U.S. are taught that racial diversity is a positive aspect of our society. When it comes to the topic of social capital (the connectedness a person has to their community and the people who live in it), two schools of thought exist over the relationship of racial diversity with social capital. One school says that racial diversity has little to no negative impact on social capital, while the other school claims that racial diversity does have a negative impact on social capital. This study analyzes both schools of thought and sets up a framework for further research.

Presenter – Will Pettit

Department: Political Science

Advisor: Dr. Charles Rowling

Title: ***The Military Industrial Complex in a Post-Cold War World: A Comparative Case Study Analysis of the F-22 and F-35***

The Military Industrial Complex (MIC) has evolved over time to control policy decisions and influence actors in the

policy making process. Our research evaluated the MIC, and how it has evolved over time in its tactics, influence, and size. Specifically, we looked at the two cases of the F-22 Raptor and the F-35 Joint Strike Fighter (JSF). In the study, we examined the acquisition of these two planes and how the MIC was involved in influencing the relevant actors in Congress, the Pentagon, and the White House. This case study provides a comparative look at the two programs and takes a look at the extend of the problem that the Military Industrial Complex continues to be.

Psychology

Presenter -- Breanna Carman

Co-Presenters – Stacey Johnson and Brandi Hill

Department: Psychology

Advisor: Dr. Krista Forrest

Title: ***The Effects of Law and Order on Perceptions of Police Interrogations***

This study examined the effects watching Law and Order on perceptions of confession voluntariness when police use different interrogation strategies. There was no effect of Law and Order viewing on participants' perceptions of voluntariness suggesting that watching crime shows does not influence perceptions of police interrogation strategies and their ability to elicit voluntary or involuntary confessions.

Presenter – April Guthrie

Co-Presenter -- Tom Worcester

Department: Psychology

Advisor: Dr. Richard Miller

Title: ***The Effects of Ego Depletion on Moral Decision Making***

The purpose of this study was to examine the effects of ego depletion on moral decision making in sports. Specifically we looked at the number of fouls committed in close and not close basketball games. We hypothesized that players under stress would be more likely to demonstrate a lost ability to self-regulate in the form of committing more fouls than players who were not stressed. We sent out a survey to determine which basketball situations would be most stressful. Then we examined the last three minutes of 11 archival basketball game films and recorded the number of fouls committed and the score of the game. We found an interaction between the number of fouls committed and the game score that approached significance ($p = .10$). As expected, individuals whose team was losing in a close game committed more fouls ($M = 3.0$) than individuals in any other situation ($M_s = 1.0$).

Presenter – Jonathan Hess

Department: Psychology

Advisor: Dr. Krista Forrest

Title: ***Evaluating Different Forms of Police Interrogation Evidence***

Participants were drawn from a random subjects pool at the University of Nebraska at Kearney using Sona Systems. In our study we used an equal focus camera perspective interrogation

and created three separate formats: video, audio, and transcript. In the interrogation two interrogators questioned the suspect. After the suspect confessed to the crime, the video, audio, or transcript format of the interrogation ended and participants filled out a questionnaire. We measured the degree to which the suspect is perceived to be coerced or deceived in their confession and during the interrogation. Fifty-six students participated; 20 who listened to the audio format, 19 watched the video format, and 17 read transcript format. The finding suggests that format did not affect the participants' view of deception and coercion during the interrogation and confession.

Graduate Studies Oral Presentation Abstracts

Communication Disorders

Presenter – Lindsey Shoemaker
Department: Communication Disorders
Advisor: Dr. Linda Crowe
Title: ***Comparing the Effects of
Traditional Dialogic Reading and
Music-Enhanced Dialogic Reading
on Language Production and
Comprehension of Preschool
Children with Language
Impairment***

Shared book reading is one way for adults to help children acquire preliteracy skills. Dialogic reading (DR) (Whitehurst, et al., 1994) is an evidence-based approach to adult-child picture-book reading that incorporates specific interactions to actively engage a child during one-on-one story time. Current literature shows that the use of DR as a preliteracy intervention results in notable language gains for children who exhibit varying degrees of language impairment. Preschoolers have demonstrated longer utterances, greater

vocabulary diversity, and more utterances during DR book interactions. Music is often incorporated in early intervention to engage preschoolers in language activities and has also been shown to significantly enhance preliteracy skills. This study compares the effects of traditional DR strategies and music-enhanced DR strategies during storybook reading on the language production and comprehension of preschool children with language impairment.

Biology

Presenter – Rebecca Pawlak
Department: Biology
Advisor: Dr. Casey Schoenebeck
Title: ***Characterizing the Abiotic and
Biotic Components of Nebraska
Interstate-80 Lakes: Implications
for Growth of Stocked Fish
Populations***

The Nebraska Game and Parks Commission (NGPC) stocks the Interstate-80 lakes of Nebraska with a variety of fish species to establish recreational sportfish opportunities for anglers. However, the physicochemical and biological characteristics likely vary among I-80 lakes which could impact the growth and survival of stocked fish. Eight pumped and 13 borrow pit type lakes were chosen to look for differences in sediment nutrients as well as taxa-specific zooplankton and macroinvertebrate differences between lake type and month. Differences in sediment nutrients were found between lake types as phosphorus in pumped

lakes was greater than borrow pit lakes ($F = 11.692$, $df = 1,122$, $P = 0.001$). Therefore, the ratio of nitrogen to phosphorus (N:P) also differed between lake types likely influencing lake productivity. Taxa-specific densities of zooplankton and macroinvertebrates varied between lake types and months providing direction on future sportfish stockings. Characterizing the Interstate-80 lakes by lake type will help guide the Nebraska Game and Parks Commission in future fish stockings as to which lake type has the best chance of producing harvestable populations.

English

Presenter – Justin Zyla

Department: English

Advisor: Dr. Brian Ray

Title: ***World Englishes Theory in the Classroom: Bridging the Gap Between Theory and Practice***

Suresh Canagarajah's recent study into World Englishes theory shows a need to broaden our understanding of "English" to include national and international varieties of the language. While relatively new, his concepts have become generally accepted in the study of composition. However, in practice, the theory has gained little traction in the classroom, instructors adhering to Standard American English (SAE), instead. Even in light of the CCCC's "Students' Right to Their Own Language," a backlash occurred in the U.S., codifying a narrow version of English in education through ideas of national unity. The narrow view became

further entrenched in the recent English Only movement and legislation. While the movement explicitly sets itself against other national languages, implicitly, assumes narrow Standard American and White English Vernacular forms. This paper plans examine why World Englishes theory has gained so little traction in the classroom, suggesting that political beliefs rarely exist in a vacuum. Especially due to the recent polarization of political ideology, the English Only movement becomes hard to separate from Republicanism and Conservatism, and thus the World Englishes theory operates not just against a narrow, privileged view of English, but against one of the major political ideologies of the "American" nation-state. This creates a new challenge for broadening the understanding of English in the university and a need to reconsider its presentation in Composition studies and classrooms.

History

Presenter – Brittany Musil

Department: History

Advisor: Dr. James Rohrer

Title: ***Righteous Reprobation***

Following the October Revolution, the newly established Soviet government began a brutal campaign against the Orthodox Church, seeking to dismantle the Church's longstanding authority over Russian citizens. This assault elicited a worldwide response, as citizens of democratic countries across the globe

criticized Soviet leaders for their severe atheistic crusade. The American public's response, however, was more complicated. During the earliest years of Soviet rule, very little outcry appeared regarding the various anti-religious atrocities being committed in Russia. It was not until the mid-1920s that American sources began to openly criticize the religious attitude of the Bolsheviks. Still, once criticism emerged, it was widespread and fervent, as various groups attacked Soviet religious policies from religious and democratic perspectives. This project analyzes the American response to Soviet religious repression during the years following the October Revolution, examining both the extent of the criticism, and the perspectives from which it emerged.

Presenter – Stacey Stubbs

Department: History

Advisor: Dr. Mark Ellis

Title – ***'Gentle River Goes Mad': The Republican River Flood of 1935 and the Legacy Left Behind***

Natural disasters, such as the Dust Bowl, played a significant role in the lives of the American citizens during the 1930s. The Dust Bowl affected many Mid-western farmers between 1934 and 1936, including those in southwestern Nebraska, northern Kansas, and eastern Colorado. Drought and poor farming techniques led to widespread and devastating dust storms. These storms ripped away the topsoil, and the remaining earth was left parched and desperate for moisture. When rain finally

came to this region of the country, the dried out ground simply could not handle the massive influx of precipitation. One of the most prominent examples of this occurrence includes the flooding of the Republican River on May 31, 1935. Sweeping across the Republican Valley, the river destroyed the property of hundreds and resulted in the deaths of dozens. This disaster encouraged government intervention in the region, and this intervention in the aftermath of the flood reflected government involvement occurring across the country. The long-term involvement of state and federal governments is also notable, as the building of dams and the creation of new flood control acts forever impacted the residents of the Republican Valley. The aftermath of the 1935 Republican River Flood led to increased government involvement in the Republican Valley, demonstrating the increased government involvement in society on the national scale during the Great Depression and in later decades.

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