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SCHEDULE OF EVENTS

Friday, April 6, 2007

7:30 - 9:00 a.m.	Poster Set Up	NSU 238
9:00 - 11:00 a.m.	Judging	NSU 238
Noon - 1:30 p.m.	Luncheon Guest Speaker: Clayton Thyne	NSU 238 A&B
1:30- 3:30 p.m.	SRD Oral Presentations	NSU 310 NSU 312
1:30 - 4:30 p.m.	Poster Session Open	NSU 238
3:30 - 4:30 p.m.	SRD Award Reception	NSU 238
5:00 p.m.	Posters Removed	NSU 238

Friday, April 27, 2007

8:30 - 3:00 p.m.	Student Conference on Language and Literature	Thomas Hall
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FINE ARTS & HUMANITIES

Art & Art History

Katrina Florell (1)

ADVISOR = Jake Jacobsen
Porcelain Possibilities

Attending the National Council on Education for the Ceramic Arts will promote growth in my education at the University of Nebraska at Kearney through new and recent information obtained on ceramic processes, particularly in porcelain. Subsequent to the NCECA conference, I intend to apply the information gained to my senior work. Currently, my work is lacking in areas of symbolism and glaze application. Porcelain is one method of solving these problems. As a result of the information, a change will occur with benefits including more knowledge about porcelain and other white clay bodies, a well prepared senior exhibition and this knowledge gained that would be applied to my teaching career as well as my career as an artist.

Rachel Sitzman (2)

ADVISOR = Richard Schuessler
Devaro Fine Linens

The intention of this project is to produce marketing materials for a fictional fine linen company, Devaro. This company features products for the bed, bath, and table that are stylish, luxurious, and comfortable. The target market for the company is female city-dwellers ages 25-40 with household incomes of \$100,000-250,000. Devaro operates on three business tiers: wholesale (hotels), retail (independent fine linen boutiques), and private label (found in New York, Los Angeles, San Francisco, and Miami). Devaro competes with specialty retailers such as SFERRA Fine Linens, Anichini, and Yves Delorme. Objectives of the project include creating a unified system, which Devaro would apply to all levels of their business tiers. Also displaying the company as upscale with dreamy/romantic tendencies would be an important goal. Research will be conducted in the form of a catalog, swatch book, website, product packaging, posters, and display units.

English

Elissa Martin (3)

ADVISOR = Robert Luscher
American Literature and the Era of the Salem Witch Trials

The historical period from 1680 to 1700 in American literature was characterized by many writings about witches and witchcraft. Historically, the Salem Witch Trials of 1692 impacted not only social and political aspects, but also literature as witchcraft became a major topic for literary minds. Even in recent years this topic is addressed in genres such as historical fiction and adolescent literature. Witchcraft was a huge fear and concern, and since English law had declared it a capital crime in 1641, people felt justified in combating it. Puritan values and beliefs also contributed highly to the witch scare. Because differences were not tolerated, anyone who expressed individualism in any way was automatically a target. Likewise, many scholars believe that the girls who “named” witches were probably just seeking attention and relief from the awkwardness of adolescence when they found themselves caught in a web that they could not escape.

Music & Performing Arts

Caleb Hastings (4)

ADVISOR = James Payne
International Music Products Association

A group of music business majors desired to learn more about the international music products trade show and market. The students did their research at the 2007 NAMM Show, an international music products show hosted by the National Association of Music Merchants. The students researched their individual interest areas in several ways. They visited various exhibits to see and work with products, visited with sales representatives or technical development staff asking questions, attended concerts and demonstrations of new products, and participated in educational sessions given by NAMM or by NAMBI featuring well-known speakers and educators in the industry. Each student will prepare a two-page paper outlining the results of their research and assist with the group poster at the Student Research Day. The students will write up a report of their research with the results and a summary of what they learned through their research.

Hikari Maekawa (5)

ADVISOR = Valerie Cisler

The Evolution of the Piano Trio-Effective Stylistic Interpretation through Comparative Analysis of Mozart, Beethoven, Debussy, and Shostakovich

This study is designed to provide a comparative analysis of four contrasting works for piano trio (piano, violin, and cello) that will serve to enhance an understanding of the style characteristics that affect performance interpretation. The works studied and performed are Piano Trio in C Major, K. 548, by W. A. Mozart; Piano Trio in C Minor, Op. 1, No. 3, by Ludwig van Beethoven; Piano Trio in G Major, by Claude Debussy; and Piano Trio in E Minor, Op. 67, by Dmitri Shostakovich. Each work is examined through Contextual Analysis (including musical, social, historical, and cultural influences), Theoretical Analysis (including fundamental musical elements and compositional techniques related to form and structure), and Style Analysis (including range, pedal, harmonic color, expressive indications, and idiomatic use of the instruments) and their implications on effective performance interpretation. The study concludes with sample performance clips that highlight the stylistic differences between the works.

Matthew Rauert (6)

ADVISOR = Andrew White

Pablo Casals as Composer: Selected Sacred Choral Works

Pablo Casals (1876-1973) was perhaps best known as one of the world's most renowned cellists. His accomplishments spanned the globe as a great innovator of cello technique. He was a famous conductor as well, but his compositions have been under-researched by academia. The purpose of this research was to unearth the sacred choral works of Casals, to examine them, evaluate them in terms of musical value, and to place them in the context of Casals's life. Casals's sacred choral works could be divided into two different groups: one, the group of pieces composed earlier in Casals' life, before the end of the Second World War, and two, his oratorio, *El Pessebre*. Each group has a story tied to it, one that could be found by examining both

the scores to the pieces and the literature that can be found that places the works on a timeline of Casals's life. This research answers two questions regarding these sacred choral works of Pablo Casals. First, why each of the sacred choral works were written, and, second, and perhaps more importantly, why it is that only one or two of Casals's sacred choral works are ever performed by today's musicians. This work shows that the answers to these questions are centered first on Casals's efforts to come to the aid of those around him and, second, the fact that many works of composers of the twentieth century are swallowed up by their contemporaries. Ultimately, this research proves that Casals should not be remembered for only his cello performances, but his compositions and efforts as a humanitarian as well.

Communications

Kanako Kusunoki (7)

CO-PRESENTORS = **Amanda Baillie, Kathryn Bodenhamer, Cade Feurer, Jason Gould, Kevin Hervert, Hillary Kruger, Happy Macwan, Matthew Rieckman, Lindsay Schluntz, Mihoko Yamamoto and Drew Youngs**

ADVISOR = Ruth Brown

Analysis of Heartland Museum of Military Vehicles

Heartland Museum of Military Vehicles (HMMV) is a non-profit organization dedicated to restoring and preserving military vehicles in honor of the men and women who served in the armed forces. Located at Interstate 80 exit 237 (Lexington), the museum includes 98 vehicles plus weapons, uniforms, rations, medical supplies and gear used in 20th century warfare. The Ad Campaigns class used primary research to learn about the client through first-hand visits and about its consumers by analyzing a decade of museum records. Secondary research provided information on competitors and additional facts on the client and consumers. Research helped determine the integrated marketing communication strategy, which targets veterans and families with a message that positions HMMV as vital to understanding life as a soldier. Objectives are to increase annual attendance to 10,000 (20+%), donations from visitors by 20%,

gift shop receipts by 20%, and the number of volunteers by 25.

BEHAVIORAL & SOCIAL SCIENCE

History

Racheal Smith (8)

ADVISOR = Linda Van Ingen

Americans Overseas in the Cold War: The Shift in Attitudes from American Superiority to Cultural Sensitivity

After WWII America was no longer isolationist. In fact, by the 1960's, over 1.5 million Americans were living overseas serving in a variety of ways, including in the military, in government, business and non-profit organizations. As a result of the residency of American citizens abroad during the Cold War, there was a gradual change in the attitudes of Americans towards the world. One of the biggest indicators of this shift in thought is mirrored in the literature from this time period. During the Cold War, America went from seeing itself as the heroes of the world fighting against communism to seeing itself by the 1970s as the "Ugly Americans" who needed to learn to tolerate other cultures. This shift in attitude continues to be as important today as over 4.1 million Americans live overseas. An appreciation of cultural differences can contribute to the success of Americans' efforts overseas.

Sarah Westesen (9)

ADVISOR = Mark Ellis

"We Can Serve Behind the Lines": Nebraska State Teacher's College and World War II

The 1940s brought change for the Nebraska State Teachers College. World War II had an impact on the student population, faculty, campus, and everyday life. It affected social lives, class schedules, and their ideas about the world. During the war the campus struggled with the loss of many young men, doing everything they

could to support them. After the war, the campus flooded with veterans, putting a strain on housing. Although NSTC was situated in the heart of the Midwest, it was not exempt from feeling the effects of national problems. It's important for students to realize how much past events have effected their lives. Not only was the NSTC student body, campus, and faculty greatly effected by World War II, but it provided a huge amount of support to classmates sent overseas through fundraisers, letter-writing, and other activities. These activities the campus became united and together to provide support.

Psychology

Jamie Babutzke (10)

CO-PRESENTORS = Joshua Sole

ADVISOR = Krista Fritson

Exploring Alcohol Use, Dependency, and Alcohol Related problems in College Students along with the role of Peer-Health Resources and Risk Management

The aim of this study was to determine the relationship between alcohol used, alcohol dependency, and subsequent problems and consequences associated with alcohol consumption between students who are members of Greek life and students who are not members of Greek-life. Dangerous and harmful behavior patterns of alcohol abuse, dependency and specific negative consequences and problems associated with alcohol abuse during college were determined by using established assessments. One hundred and sixty-one undergraduate students completed a survey comprised of the AUDIT, ADS, CAPS-r scales, and a peer-health alcohol risk management scale. It was found that Greek students have lower or equal scores of alcohol abuse and dependence in the AUDIT and ADS, when compared to non-Greeks. There was no difference found between Greeks and non-Greek in alcohol abuse, alcohol related problems, or the frequency of receiving negative alcohol consequences as a result of alcohol consumption.

Jamie Babutzke (11)

ADVISOR = Wayne Briner

Visualization of Depleted Uranium in the Mouse Brain

Depleted uranium (DU) is a heavy metal in extensive use by the US military, and other

nations, as armor piercing munitions. DU is a controversial material that has been implicated in Gulf War Veterans Illness and suggested as a cause for reported increases in cancer deaths in regions where it is used. Recent reports from this laboratory and others support the idea that DU had neurotoxic properties. This project describes the methodology to visualize the deposition of DU in the CNS of the mouse using of histologic methods. Mice were exposed to DU in drinking water at concentrations of 0 or 75mg/L for two weeks. Animals were anesthetized and perfused with a staining “cocktail” modified from the protocol described by Kalinich & McClain (2001) to visualize DU deposits in cell culture. The brains were removed, sectioned, and mounted. Similar sections from control and experimental brains were compared for intensity of staining.

Sara Brady (12)

CO-PRESENTERS = **Jennifer Bruns, Bradley Stastny**

ADVISOR = Krista Forrest

Mock Jurors’ Perceptions of Evidence Ploys Embedded in Actual Interrogation Transcripts

Police may use false evidence ploys to gain a confession from the suspect (Inbau, Reid, Buckley & Jayne, 2001; Ofshe and Leo, 1997). Examples include lying about DNA, failed polygraphs, demeanor, etc. Previous research found when reading lists of evidence ploys participants believed police use scientific, general, and identification ploys at comparable rates (Bienhoff, Forrest, Leo & Stastny, 2006). However, identification ploys were considered the most deceptive and coercive of the three (Stastny, Forrest, Leo & Bienhoff, 2006). The current study discovered participants evaluating these same kinds of ploys embedded in actual police interrogation transcripts rated identification ploys as significantly more deceptive and marginally more coercive than scientific and general ploys. We also found participants rated ploys equally deceptive and coercive regardless of whether they resulted in true or false confessions. Lastly, participants did not rate the same ploys differently as a function of whether they contributed to true or false confessions.

Heather Colling (13)

CO-PRESENTER = **Megan Province**

ADVISOR = Richard Miller

The Door In the Face Effect

The purpose of this experiment was to test the door-in-the-face-effect using four priming techniques: reciprocal concession, relative cost, guilt, and worthy person. Participants received a large request, priming, and then a small request. Our results did not support previous research as no door-in-the-face effect was found in any condition.

Jacob Knutson (14)

ADVISOR = Krista Fritson

How Family Alcohol Abuse Affects Children

Since alcohol use among college students is a common problem, we were interested in seeing if the extent of alcohol use among young adults could be predicted by household use when they were children. We had 100 students complete questionnaires. We found that there is a relationship between alcohol use in the home during adolescence and current alcohol use.

Jamie Lamb (15)

ADVISOR = Robert Rycek

Influence of Parenting Styles on Adult Aggression and Road Rage

The purpose was to determine which of the four parenting styles manifested the most aggression and road rage in young adults. Participants were administered parenting styles, aggression, and road rage questionnaires. It was found that permissive uninvolved and permissive indulgent parenting styles showed higher levels of aggression including road rage.

Shane McFeely (16)

ADVISOR = Joseph Benz

Impact of Olfactory Cues on Parental Instincts

The current study examines the effects of gender and olfaction on parental yearning. We hypothesized that the genders of the rater and baby wearing the outfit would affect the scores on a parental yearning scale. Results showed that only participant gender had a significant effect on parental yearning scores.

Tiffany Sherwood (17)

ADVISOR = Krista Fritson

The Relationship Between Perfectionism and Life Satisfaction

The present study examined the relationship between perfectionistic tendencies and reported life satisfaction. Upon completion of two perfectionism scales and a life satisfaction scale,

participants were divided first into the perfectionistic group and the nonperfectionistic group to examine any difference on life satisfaction. Afterwards, participants were further divided into the following groups: maladaptive perfectionists, adaptive perfectionists, and nonperfectionists. Previous research using middle school students resulted in the adaptive perfectionists reporting greater life satisfaction in comparison to maladaptive perfectionists and nonperfectionists. Gilman(2003). It was hypothesized that consistent with previous research; college students who have adaptive perfectionistic tendencies would report the highest life satisfaction when compared to the individuals with maladaptive perfectionistic tendencies and the individuals with tendencies toward nonperfection. Results indicated that there was not a significant effect on life satisfaction when comparing overall perfectionists and nonperfectionists or when comparing all three perfectionist subtypes. Gender differences were also examined.

Stacy Simonsen (18)

ADVISOR = Krista Fritson

Exploring the Relationship between Personality Traits, Binge Eating Behavior, and Alcohol Abuse

The present study examined the relationship between personality traits and binge eating and drinking behaviors. Some personality traits are more prominent in individuals with eating disorders. Many of these traits are also common in individuals with alcohol use disorders. Students completed surveys evaluating eating and drinking behaviors and personality traits. It was hypothesized that people who binge eat and/or abuse alcohol would score high on neuroticism and low on conscientiousness. Results showed that people who engage in binge eating behaviors scored significantly higher on neuroticism. Results for conscientiousness were marginally significant. Results for alcohol abuse and personality traits were not significant.

Shannon Thompson (19)

ADVISOR = Krista Fritson

The Role of Drinking Refusal Self-Efficacy in Alcohol Consumption, Drinking Behaviors, and Alcohol-Related Problems

The present study investigated the role of drinking refusal self-efficacy (DRSEQ) in

alcohol consumption, drinking behaviors, and alcohol-related problems as measured by the Alcohol Use Disorders Identification Test (AUDIT). I hypothesized that participants with lower drinking refusal self-efficacy would have higher scores on each subscale of the AUDIT. Findings revealed significant negative correlations among each subscale of the DRSEQ and each subscale of the AUDIT. Participants with lower drinking refusal self-efficacy did have higher rates of alcohol consumption and dependency, more adverse psychological reactions, and more alcohol-related problems than those with higher drinking refusal self-efficacy. Implications for these findings are discussed.

Brindi Utemark (20)

CO-PRESENTER = **Lindsay Hinz**

ADVISOR = Krista Fritson

Perception of Depression Among College Students

We examined the effects of media commercials as compared to standard health screenings for depression and the likelihood for individuals to self-diagnose. We hypothesized that individuals shown medication advertisements would be more likely to self-diagnose depression than those who took a standard health screening or participated in neutral conditions.

Social Work

Elizabeth Killip (21)

ADVISOR = Maha Younes

Forever Changed; The Transformation of Rural America Through Immigration

This qualitative case study reveals the attitudes and experiences of long-term residents of one Midwestern rural community that has been dramatically transformed by immigration. The 123 phone interviews and two focus groups provided much needed insight into the residents' perceptions of immigration and immigrants. The study examines their ensuing personal struggle and community's growing pains; and recommendations for policy makers, immigrants, and other communities facing similar situations.

NATURAL & PHYSICAL SCIENCES

Biology

Mason Dendinger (22)

ADVISOR = Paul Twigg

Effects of Hydrogen Peroxide on Switchgrass Germination Rates

Switchgrass is a warm season perennial native grass to North America. This grass can produce high yields in tons per acre with little fertilizer. Since it is a native species, it is very resistant to pests, diseases, poor soils and drought. The seeds of switchgrass are very small which make them slow to germinate and vulnerable to competition with weeds. Switchgrass is being developed as the new biofuel to make clean burning ethanol and diesel. Switchgrass would be used in order to reduce America's dependence on foreign oil. My research is striving to find a way in reducing the germination time of the switchgrass seedlings once planted. I have treated the seeds with differing concentrations of hydrogen peroxide and monitoring germination rate. I will present the data from my progress on this project.

Jenna Derr (23)

ADVISOR = Kimberly Carlson

Effects of the Antioxidant Properties of Blueberries on Mortality Rates and Indy Gene Expression in Drosophila melanogaster

Foods with antioxidant properties, such as blueberries, may extend the longevity of an organism. In addition to environmental factors, genetics also plays a role in aging and death. In *Drosophila melanogaster*, genetic mutations to the Indy gene (I'm not dead yet) have increased lifespan. The objective of this experiment is to determine if blueberries added to instant fly food affect mortality rates and Indy gene expression profiles of female *D. melanogaster*. To do this, *D. melanogaster* were reared on media with or without blueberries, mortality curves tallied, and females collected for RNA extraction and analysis of Indy gene expression by quantitative real time reverse transcriptase polymerase chain reaction (qRT-PCR). Survivorship curves

showed that females reared on blueberry media lived significantly longer than control reared. qRT-PCR analyses revealed differential expression of Indy between treatments and time points. This research will provide insight on the role of gene regulation of aging.

Scott Griffith (24)

ADVISOR = Julie Shaffer

Looking for the True Alkalophile in a Hypersaline, Alkaline Environment

The purpose of this experiment was to find bacteria in an alkaline/hypersaline environment that are alkalophiles, bacteria able to grow in moderate to high pH. In this study, we collected water samples from both alkaline and non-alkaline lakes within a 2 km area. Colonies were isolated and then grown on a series of pH⁶™s in an effort to identify true alkalophiles. Alkalophiles were selected as they only grow at pH 9 and higher. Isolates were identified by colony morphology, gram stains, oxidase testing, and oxiferm and enterotube analysis. Currently, we are working with 154 isolates. Ninety nine percent of the isolates stained gram negative and oxidase negative. We have also found one bacterium that appears to be a true alkalophile. Once basic identification is completed, the isolates will be further identified by 16s rDNA sequence analysis at the University of Nebraska-Lincoln DNA sequencing facility.

Christine Gilling (25)

ADVISOR = Kimberly Carlson

Effect of OTK18 on Differentiated Neurons Stimulated With TNF- α

OTK18 is a transcriptional suppressor expressed in all tissues under homeostatic conditions. Previously, supernatants from a monocyte/macrophage (M ϕ) cell line that had induced overexpression of OTK18 were able to sustain neuronal survival in culture. We hypothesize that cytokines produced in the M ϕ supernatants (SN) are paramount in this neuroprotection. Cytokines are a class of molecules that aid in cellular communication. Tumor necrosis factor alpha (TNF- α) is a cytokine produced primarily by M ϕ during the immune response. This cytokine is a Janus-faced molecule that can function as a growth factor, defend the body against certain pathogens, induce the response of other cytokines, and/or stimulate cell death. This study is primarily concerned with the

interaction between TNF- α expression in dying neurons and OTK18 regulation of this process. The hypothesis is that neurons cultured in MÖ SN containing overexpressed OTK18 will be neuro protective against TNF- α stimulation. Neurons were treated with 20 ng/mL nerve growth factor (NGF) and TNF- α . After differentiation, they were treated with MÖ SN from OTK18 overexpressed cultures. Morphological differences in the cultures were observed. This experiment will provide insight into delineating the role of OTK18 regulation of neuronal survival in response to TNF- α production.

Jeffrey Hamik (26)

ADVISOR = Wyatt Hoback

Use of systemic pesticide and its performance against leafhoppers in commercial potato production

Leafhoppers (Cicadellidae) are cosmopolitan insects. High levels of feeding can cause yellowing of leaves, stunting of plants, leaf roll, and “hopperburn”. Besides cosmetic effects and reduction to photosynthesis, leafhoppers are carriers of many different viruses and diseases. Because of the potential to cause direct damage and to transmit viruses, potato growers commonly use systemic insecticide. Systemic pesticides, such as Admire, provide early season protection but decline later in the season. Little information exists concerning the performance of Admire among different varieties of potato. In 2006, leafhoppers were counted using sweep net samples on three fields comprised of three different varieties. Based on the results it appears that the systemic application provides equal control of leafhoppers among varieties. These results are useful in determining the schedule of additional insecticide applications when economic thresholds are reached.

Katie Hoblyn (27)

ADVISOR = Joseph Springer

A Coyote Population Index in Rangeland Versus Cropland Regions

Millions of dollars in damages due to coyote depredation are reported every year. Since 1978, the year of record high coyote fur prices, coyote populations have been increasing, which increases the risk of livestock loss and damage caused by the animals. This study compared two regions: a rangeland area in the Sandhills (Loup

County) and a cropland area (Buffalo County), Nebraska. The purpose was to see if human activities in the cropland area had any effect on the population of coyotes. Scent stations created on sides of unpaved roads (north of Taylor and west of Riverdale) were used to compare the coyote population. The rangeland area showed a statistically significant decline in population between September and October. The rangeland population was also significantly lower than the cropland population.

Jennifer Johnson (28)

ADVISOR = Wyatt Hoback

Successful Fishing for Tiger Beetle Larvae: Implications for Conservation of Rare Species and Their Habitat

Tiger beetles are increasingly the focus of biological monitoring and insect conservation. The larvae are sit-and-wait predators which form permanent burrows in limited habitat. Previous studies have sampled larvae by digging up habitat, potentially endangering the larvae and necessitating the formation of new burrows. We conducted a series of field and laboratory studies to examine the possibility of using a grass blade/stem to extract larvae from their burrow without damaging the larva or the burrow. We found that larvae of many species can be efficiently sampled. These larvae have a low percentage of injury and can be assessed for parasitism and mass. They can then be returned to either their own burrow or an alternative burrow where they can be re-sampled. These results indicate that fishing tiger beetle larvae can be used for monitoring populations, reducing parasite impacts, and relocating study organisms while eliminating the impacts associated with excavating larvae.

Ahna Luebs (29)

ADVISOR = Steve Rothenberger

Plant Species Diversity of the Juhl Prairie in Nebraska

Plant species diversity in mixed-grass prairies has been reduced due to human activities such as farming, development, and overgrazing by livestock. Juhl Prairie near Riverdale, Nebraska, is owned and managed by the Prairie Plains Resource Institute (PPRI) of Aurora, Nebraska. This prairie has been reseeded, grazed and burned periodically. Our quantitative botanical study of plant diversity and species distribution was completed during the 2006-growing season. The site was quantitatively sampled using plots

that were each 10 m². Within these plots, percent plant cover was estimated using a modified Daubenmire cover-abundance scale. Vegetation was also sampled by placing 20 (.2 m²) random quadrats/plot along systematic transects. The majority of the plots were placed in the restored or reseeded area of Juhl Prairie, but sampling was also done on west and north facing plots. Approximately 120 plant species were documented in this study.

Jonathan Meyer (30)

ADVISOR = Marc Albrecht

Soil profile of the Island of Vieques, PR

To investigate the effects of a man made road on a mangrove ecosystem several environmental parameters must be examined to gain insight into what factors of the tropical shoreline habitat have been disturbed. Flow of energy and matter in mangroves is dynamic. Multiple processes of productivity, nutrient input and output, respiration and biomass accumulation are all influenced by tidal movement. True mangroves occur exclusively in mangrove habitats, the area of the intertidal zone, and do not occur elsewhere. High Salinity of mangrove soil is due mostly to salt introduction through the influx of sea water with the tide. Salinity levels of these soils were examined on Vieques. Mangrove soils were of significantly higher (p=.05) salinity than non mangrove soils everywhere on the island. Small scale heterogeneity and hydrology probably account for significant differences in salinity between mangrove soils immediately adjacent to mangrove soils with varying salinity.

Brett Olds (31)

ADVISOR = Kerri Skinner

Drought effects on zooplankton at Harlan County Reservoir

Harlan Reservoir serves as flood control and irrigation supply for agriculture in Nebraska and Kansas. Over the past four years, Republican River inflows have declined and exacerbated current drought conditions seen in the Midwest, resulting in a total water pool 38% of capacity. Zooplankton species are the microscopic primary consumers in the lake which provide a food base for all larval fish. The timing and concentrations of these organisms are vital to the survival of fish species. Two important groups of zooplankton are Copepoda spp. and Cladocera spp. and each emerge at different times of the year. Cladocera spp. are larger and sought after by walleye,

whereas Copepoda spp. are smaller, more abundant in Harlan Reservoir and are readily consumed by filter feeders such as gizzard shad with smaller mouths. Total zooplankton per liter should be maintained at 100/L for healthy sport fish populations. In 2003 and 2004, levels were half this amount, but above that threshold in 2005 and 2006. Understanding these relationships is crucial to maintaining a productive fishery.

Kristy Rickert (32)

ADVISORS = Joe Springer and Kim Carlson

*Is There Gene Flow Between Populations of Deer Mice (*Peromyscus maniculatus*) Across Interstate 80 in Central Nebraska?*

Habitat fragmentation can interfere with the dispersal of natural populations of animals. The construction of roads can restrict the movement of many species, and thus, create several isolated populations. Limited movement in these subpopulations can hinder the exchange of genetic material between individuals and decrease the genetic diversity in the population. The frequency of crossing by deer mice (*Peromyscus maniculatus*) across Interstate 80 in central Nebraska, and the genetic variability between deer mice populations on the north and south sides of Interstate 80 were examined using two microsatellite markers, PMs19 and PMs21. Only one deer mouse crossed Interstate 80. Since a few deer mice cross the interstate, genetic variation between deer mice populations on the north and south sides of Interstate 80 is low. This investigation and future studies can be used to offer suggestions on improving the gene flow of several animal species across interstate highways.

Brian Sass (33)

ADVISOR = Tamara Smith

*Use of chemical cues in trailing behavior of the grain mite, *Acarus siro**

Grain mites, *Acarus siro*, feed and reproduce on a variety of grains, cheese, and pet food. In optimal temperature and humidities, mites are able to spread throughout storage facilities, with populations reaching over 2 million mites per 10g of food. Movement patterns by mites during infestation are poorly documented. We conducted a series of trials to test movement patterns and examine the influence of previous mite movement on subsequent trials. Mites were placed individually on fishing line. We recorded the total time to travel 10cm. After the first mite

reached the end of the string, another mite from the same stock was placed on the same string and timed. There was a strong correlation between the results of the first and second trials suggesting that mites are leaving chemical trails which subsequent mites follow. These data may provide information for trapping methods which could decrease infestation levels in storage facilities.

Katie Schaneman (34)

ADVISOR = Paul Twigg

Nitrogen Assimilation of the Partridge Pea Plant

Nitrogen assimilation has been studied in a variety of plants. The pathways that nitrogen uses seem to differ among species. Legumes such as the species *Chamaecrista fasciculata*, which is more commonly known as the partridge pea, uptake N mainly through their roots nodules and shoots. Though the pathways and levels of N present in the plant can be identified through tissue testing, it is not yet known how N specifically affects the rates of growth and yields obtained in the partridge pea. This species is a common, native plant to the Midwest. This experiment the development of partridge pea plants in different concentrations of nitrogen. The results were not significant enough to show how the rate of nitrogen intake affects the growth of the partridge pea plant. This information could be significant in understanding how the partridge pea thrives in dry climates that have various levels of nitrogen.

Dana Stubbs (35)

ADVISOR = Janet Steele

Gender Differences in the Excretion of Calcium in Long-Evans Rats

Osteoporosis affects people world-wide, and many factors contribute to its development. To address this problem, studies have examined the effectiveness of calcium supplements to increase bone density. Because females are more prone to developing osteoporosis, I examined the influence of gender on efficiency and the amount of calcium absorbed. A calcium supplement (62.5 mg) was added to the daily diets of 8 male and 8 female Long-Evans rats for 7 weeks. Calcium excreted over a 24-hour period was measured before and after the calcium supplement was added, and results were analyzed using Student's t-test. Females tended ($0.05 < p < 0.10$) to excrete more calcium than males prior to the calcium supplement's addition. After 7 weeks on the supplement,

excretion was significantly ($p < 0.05$) increased in males but unchanged in females. These results suggest the effectiveness of calcium supplements may differ between males and females.

Manuel Torres (36)

ADVISOR = Janet Steele

The Effects of Ginkgo biloba on Short-Term Memory

Ginkgo biloba is one of the oldest trees on earth. Extracts of the leaves of this plant have been prescribed to treat many different illnesses for hundreds of years. Ginkgo biloba has been known to help improve blood flow and reduce inflammation, and research has shown that it also functions as an antioxidant. Cortisol is a hormone that is secreted in response to extended stress. The purpose of this study was to investigate the effects of Ginkgo biloba on short-term memory and to examine the interactions between cortisol and Ginkgo biloba on short-term memory. A population of college students served as subjects. These subjects first completed a computerized memory test, and a small blood sample was taken for cortisol analysis using an enzyme-linked immunosorbent assay (ELISA) technique. The subjects were then given a Ginkgo biloba supplement to take daily for 6 weeks. At the end of the 6-week period, a second memory test and blood sample will be taken.

Heather Tracy (37)

ADVISOR = Marc Albrecht

INVERTEBRATE POPULATIONS IN A MANGROVE SWAMP: A Study of Road Ecology

The purpose of this survey was to identify the types of invertebrates that are living in the mangrove habitats on Vieques, Puerto Rico, also to see if the road is causing a difference in types of invertebrates found on either side. Vegetative basal area of the site was also studied. Data was analyzed using three way ANOVA for the invertebrate portion of the study. Vegetation data was analyzed using both paired t-test and a three way ANOVA. Vegetative basal area was found to be significantly different ($p=0.037$) between sites 1, 2 and 3. Also a trend was seen between north and south side of the road for basal area. No significant differences were seen in invertebrate populations.

Benjamin Welborn (38)

ADVISOR = Julie Shaffer

Comparison of Invertebrate Populations in Alkaline and Non-alkaline Lakes in Western Nebraska

The Nebraska Sand Hills are the largest sand dune area in North America. Some water bodies do not have outflow and do not get a constant inflow of water. This makes them susceptible to evaporation and concentration of minerals, leading to alkaline, hypersaline bodies of water. These extreme environments have unusual microbial communities. At the Crescent Lake Wildlife Refuge in Nebraska four lakes were selected due to their varying pH's. Plankton samples were collected using a plankton-net once per month during the summer to see if there was a difference in invertebrate population between the lakes. The lakes differed in pH from 8 to 10. They were taken back to the laboratory and examined with a light microscope and pictures were taken of the samples. From the pH 10 lake, *Artemia salina* and *Ephydra hians* dominated the invertebrate population. Lower pH lakes seemed to contain a greater diversity of invertebrates.

Sean Whipple(39)

ADVISOR = Wyatt Hoback

Food Preference of the Grasshopper Species Arphia xanthoptera and Dichromorpha viridis (Orthoptera: Acrididae)

A study of feeding preference was carried out on two grasshopper species, *Arphia xanthoptera* Burmeister and *Dichromorpha viridis* Scudder to determine the role of these species grassland environments. Both grasshoppers were offered four plant species including smooth brome (*Bromus inermis*), big blue stem (*Adropogon gerardii*), sideoats grama (*Bouteloua curtipendula*), and Kentucky bluegrass (*Poa pratensis*). Live biomass was weighed before and after feeding in order to quantify the amount of each species consumed by the grasshoppers. Statistical analysis shows that *D. viridis* strongly preferred smooth brome ($P < 0.05$). In the case of *A. xanthoptera*, brome accounted for the most biomass consumed and was statistically different between smooth brome and all other plant species with the exception of big blue stem. This may suggest that historically *A. xanthoptera* fed on big blue stem, and the incursion of smooth brome has altered diet selection. These results suggest response of native herbivores to introduced grasses.

Roger Yerdon (40)

ADVISOR = Tamara Smith

Use of citrus extract to prevent Acarus siro infestation in stored grains

Grain mites, *Acarus siro*, infest a wide variety of stored grains and cause considerable damage. Mite populations can increase rapidly and spread from the original site of infestation. The use of citrus extract as a natural deterrent has been effective on a wide variety of arthropods. We examined the effectiveness of citrus extract (*Citrus aurantium*) as a deterrent and calculated the minimum concentration of orange extract necessary to deter grain mites. A 20 mm diameter ring was dipped in one of three liquids (water, oil, or citrus extract). A mite was placed the circle and all ensuing behaviors were observed for a period of 10 minutes. The mites left the circle in all water and oil trials, but in only 30% of the extract trials ($X^2=12.63$, $p < 0.01$, $df=2$). Our data suggest that citrus extract could provide a low-cost and natural alternative for the prevention of mites infesting stored foods.

Chemistry**Courtney Johnson (41)**

ADVISOR = Frank Kovacs

The Specific Activity of Ascorbate Peroxidase in Switchgrass

Panicum virgatum, commonly known as switchgrass, has recently gained the attention of scientists and government officials as a potential biofuel crop. Because of this increased attention, there is some interest in better understanding the biochemistry of this prairie-dwelling plant. Our lab has obtained the gene for an enzyme, ascorbate peroxidase (APX), that is important in responding to increased levels of hydrogen peroxide (H_2O_2). APX catalyzes the conversion or reduction of H_2O_2 to H_2O using a small molecule electron donor called ascorbate, also known as vitamin C. We have worked to characterize the activity of switchgrass APX (sgAPX) by measuring the rate of ascorbate oxidation for the wildtype enzyme and two mutant versions that have single amino acid substitutions. The wildtype has a level of activity (79.55 ± 18.65 mmol ascorbate/mg protein) fairly similar to APX of other plants. However, both of our mutants show significantly altered activity.

Bradley Miller (42)

ADVISOR = Christopher Exstrom

Chemistry of Mo(diimine)(CO)₄ Complexes and Diisocyanides: Evidence of Binuclear Complex Formation and Effects on MLCT Solvatochromism

To date, no reported organometallic clathrate, or “molecular-grid”, sensor materials respond visibly to changes in solution or vapor environment. As a first step toward preparing an extended solid-state material based a known metal-to-ligand-charge-transfer (MLCT) chromophore, 1,4-diisocyanobenzene (dib) was reacted with Mo(dtbbpy)(CO)₄ (dtbbpy = 4,4'-di-tert-butyl-2,2'-bipyridine) in a 1:2 mole ratio to produce the novel, binuclear complex [Mo(dtbbpy)(CO)₃]₂(dib). IR spectroscopy confirms the coordination of one isocyanide functional group and the displacement of one CO ligand per Mo center. ¹H and ¹³C NMR spectroscopy show evidence of both monocoordinating and bridging dib ligands in CDCl₃ solution. The pure [Mo(dtbbpy)(CO)₃]₂(dib) complex could not be isolated, but it was observed that diisocyanide coordination drastically reduced the degree of MLCT solvatochromism - much like that reported for Mo(diimine)(PR₃)(CO)₃ complexes. This has led to a parallel study of the effects of the p- acceptor and donor ligands on the degree of MLCT solvatochromism in Mo(diimine)(L)(CO)₃ complexes (L = PR₃, RNC, halogen anion). These results will be discussed.

Kyle Myers (43)

ADVISOR = Jonathan Thompson

Cavity Ring-Down Spectroscopy Using a LED Source

A new method for obtaining cavity ring-down spectroscopy measurements by using a Light Emitting Diode (LED) as the light source is explained. A lime-green, pulsed LED was directed into a 32 cm long optical cavity, and the photons of light escaping from this cavity were measured using a photon counter. The instrument was tested for function by injecting gases into the cavity that absorb light within the particular wavelength of the LED that we used (iodine and ozone). The ring-down time constant (t) of the light was expectedly shorted when measured with our instrument after the injection of the gases. This new method using an LED source with cavity ring-down spectroscopy may lead to manufacturing of cheaper gas detection devices or atmospheric monitoring systems.

Computer Science & Information Systems**Holly Esquivel (44)**

CO-PRESENTER = Harry Ngondo

ADVISOR = John Hastings

Utilizing Idle CPU Usage In an Automated Fashion For RSA Number Factorization

Businesses and consumers continually rely on the security of RSA cryptosystems. The RSA algorithm, which was first introduced in the 1970s, has since served as a primary means of key cryptography. As computers have increased in speed and capabilities the bit length of RSA cryptosystems has increased to lengths of 512 to 2048 bits. RSA numbers in the past have remained fairly secure because of the difficulty involved in factoring large numbers. In this research, we present an automated decryption technique implemented through screensavers, which finds the factors of large RSA numbers. We have implemented our screensaver program on thirty plus computers in a manner which restricts CPU usage while performing the mathematical calculations in order to promote hardware longevity. Our factoring algorithm has been successfully applied to RSA numbers up to 200 bits. Within the next year, we plan to expand our research to numbers to 500-2048 bit numbers.

Mark Vavra (45)

COPRESENTERS = Jed Fong, Kyle Williams

ADVISOR = Sherri Harms

Sumo-wrestling Robots

Robotics is an important computer science field due to its increasingly useful role in our automated world. The objectives of this project were to 1) understand the interplay between the physical design of a robot and the mental capacity of the robot in solving a problem; 2) experiment with various physical designs as well as mental, or algorithmic designs; and 3) compare the robotic designs by having them compete against one another in a simulated sumo wrestling tournament. During competition, the robot that was pushed out of the ring first lost the round. The robots were built from Lego Mindstorms NXT kits, and were programmed using the Lego Mindstorms NXT software. Several creative physical and algorithmic solutions were developed while trying to solve this problem. In the end, the outcome of this

competition seemed to suggest that a strong algorithm was more important than a well designed robot.

Criminal Justice

Miranda Gardels (46)

ADVISOR = Julie Campbell

Jail Time: A Deterrent for Underage Drinking?

Drinking under the legal age is not uncommon in any way in America. It is especially prevalent in communities that have colleges and universities. The University of Nebraska at Kearney is no different. The Kearney area has seen the devastating effects that alcohol can have, and many would like to see the amount of underage drinking dwindle. The current policy in this community for sentencing minors caught with an MIP (minor in possession of alcohol) is quite unique. Kearney sends underage drinkers cited with an MIP to jail for one weekend as a sanction. This sanction may seem harsh but its goal is to curb the underage drinking problem in Kearney. In this project, undergraduate students at UNK were surveyed regarding the Kearney MIP policy and its deterrent value.

Sonya Hansen (47)

ADVISOR = Julie Campbell

Effectiveness of the Sex Offender Registry: Is it a useful public safety tool?

The sex offender registry is a fairly new tool for the criminal justice system. It is used to make people aware of dangerous sex offenders around them. Sex offenders in every state are required to register on a national registry, and how that information is publicly distributed varies by state. The sex offenders typically have to give their name, address and criminal offense. The purpose of this research project was to analyze the effectiveness of the registry at notifying members of the public about the presence of sex offenders in the community. The rates at which undergraduate students and parents of children under the age of five accessed the database were compared.

John Pick (48)

ADVISOR = Julie Campbell

Assessing Perceptions of Danger in the Field of Law Enforcement

Law enforcement is generally perceived to be one of the most dangerous professions in our

society as officers regularly put their lives on the line, risking injury or even death, to serve and to protect our communities. The purpose of our research was to discover peoples' perceptions of the levels of dangerousness in the different situations that law enforcement officers encounter. Students from the University of Nebraska at Kearney and officers employed with the Kearney Police department were surveyed. The methods of this research consisted of a consensual survey made up of thirty-six questions, along with a ride-along with the officers and an interview of those officers. This research can be used to educate both the general population and those in the law enforcement community. By understanding the perceptions of risk to officers, it is possible to develop the tools to address it through education and training.

Geography and Earth Science

Ryan Haack (49)

CO-PRESENTERS = Kurt Langrud, Joe Stansberry

ADVISOR = Paul Burger

Redistricting Nebraska Legislature Using GIS

Following the 2010 Census, the Nebraska unicameral districts will be redrawn. Similar to the 2000 redistricting, Nebraska's forty-nine (49) legislative districts, drawn on the principle of 'one person one vote', will need adjustment for an increase in overall population and the continued shift eastward. In addition to equal population are the other legal mandates of compact districts that are contiguous in nature. Augmenting these legal parameters is the overarching objective in redistricting that of preserving communities of interest (COIs) - neighborhoods with shared economic or cultural characteristics. These include: school districts, counties, cities, natural resource districts (NRD), and economic trade areas. Balancing all of these criteria can be daunting. With the advent of GIS software and the personal computer, literally thousands of iterations can be performed in the time it used to take to draw one plan manually. The objective of this study is to use spatial analysis methods to determine centroids for the legislative districts that meet the redistricting criteria. ArcInfo's location allocation (LA) is utilized in conjunction with GeoLytics population estimates at the block-group level for 2011 along with the geographic boundaries for the COIs to delineate Nebraska's unicameral districts. It is hoped that the results from this

study will serve as a tool for policy makers charged with carrying out the redistricting process. Keyword: GIS, Nebraska unicameral, redistricting.

Michael Blakeley (50)

ADVISOR = Steele Becker

Preparations and Procedures for Winter Storms in Kearney, Nebraska

My paper focuses on the preparation and procedures to deal with the two Ice Storms in December 2006, by various agencies within or near the City of Kearney, Nebraska. As the Ice Storms approached, how did the news agencies inform the citizens about how to be prepared for the storms. Then after the storm, how did Kearney's Mayor office and other city departments deal with the black outs throughout to conserve electrical power as the lines feeding Kearney were being repaired. The Ice Storms left Kearney and some thirty counties without electrical power. By taking an in-depth look at the preparedness and procedures of Kearney and agencies as the storms approached. Then as the City of Kearney dealt with clean-up of broken trees and as NPPD dealt with restoring power to Kearney and the surrounding counties.

Charlene Falmlen (51)

ADVISOR = Steele Becker

A Comparative Analysis of Google Earth

Satellite imaging is a rapidly expanding area of study and interest. Google Earth is a program that allows the public to use satellite imaging for recreational and informational purposes. There are, however, positive and negative aspects to the program and its use. This research project will present both the positive and negative characteristics of Google Earth. In order to develop a comprehensive opinion, it is important to understand both sides of the issue. Therefore, this analysis will provide the reader with a solid basis for developing an opinion on Google Earth and its capabilities.

Nathan Garst (52)

ADVISOR = Steele Becker

Damage Distribution of Winter Storms

Central Nebraska's power utilities were crippled by two devastating ice storms in December 2006 that left thousands without power and caused hundreds of millions of dollars in damage. This research will focus on the spatial distribution and analysis of damage sustained by Nebraska Public

Power District, Southern Power District, Dawson Public Power District and the correlation of Federal Disaster Aid received by the power utility companies. With the extent of damage covering such a broad area, it will necessitate a rebuilding process lasting months to bring the electrical grid back to pre-storm operating capacity for each of separate Public Power Companies' districts. Damage to the electrical grid infrastructure included ice-laden lines, broken poles, toppled structures, and damaged electrical equipment.

Jamie Knuth (53)

ADVISOR = Steele Becker

Nebraska Public Power Infrastructure Damage Assessment of the December, 2006 Ice Storm

This research project will document the public power infrastructure of Nebraska that was substantially affected by the December, 2006 ice storm. The project will depict an overview of the electrical grid system that is governed by the regional public power district operators. Storm impact data will be summarized for individual counties to emphasize on electrical transportation structure damage. Maps will be used to show the geographical area of impact and photographs will show specific storm damage. Finally, I will attempt to assess the systematic breakdown of the power grid system of Nebraska's storm damage area.

Daniel McIntosh (54)

ADVISOR = Steele Becker

Distribution of Labor Caused by Ice Storm

In January of 2007 the area of Kearney, Nebraska and surrounding communities were hit by a couple of major ice storms. These ice storms hit Nebraska at two different times within two weeks. Not only did the devastation of the ice affect the land it also affected the people. This research will demonstrate not only why labor was being disbursed to the Kearney area but where this distribution of labor was coming from. Also, research will show that an abundance of materials were shipped in. The research will then touch base with the distribution of these materials as well as the people transporting them. This paper should bring a better understanding of the distribution of labor that occurred during this period of time and demonstrate just how effected people became as a result of such a devastating storm.

Amber Reynolds (55)

ADVISOR = Steele Becker

An Analysis of the December 29th-31st 2006 Nebraska Winter Storm

On December 29th 2006, a significant winter storm system began to track slowly to the northeast across the central plains, originating in the southwest United States. This low pressure system brought rain, freezing rain, sleet and snow to Nebraska, which led, in particular, to considerable ice accumulations. As the waves of precipitation continued through December 31st, they were frozen layer upon layer. The heavy ice then caused widespread damage in central and south-central Nebraska. Many trees and power poles snapped from the weight of the ice, causing lines to be down and extensive power outages. This paper will analyze the history of the winter storm that affected several Nebraska counties, as well as storm-related damage.

Anthony Reznicek (56)

ADVISOR = Steele Becker

Winter Storm: Different Reactions for Different Areas

On December 29th 2006 a large winter storm impacted a large area of the country, with Nebraska, Colorado, and Kansas most affected by this storm. Central Nebraska received enormous amounts of ice causing power grids to go down and hindering transportation. Certain areas of Colorado had three feet of snow which piled up to 15 foot snow drifts in some areas. Kansas had many people stranded in various places without power. The National Guard was even called to help rescue people from areas in Kansas that had so much snow, traditional rescue services couldn't reach them. My research project examines how different areas were affected by the storm and how areas reacted differently to get things back to normal.

Amos Roberts (57)

ADVISOR = Steele Becker

A Comparison of Storms and Federal Response

In the last 60 years Nebraska has been struck by two notable winter storms the blizzards of 1948-49 and the ice storms of 2006-07. Though the area affected was almost the same what differed between them, was the preparedness of residents, and the response of the government in the form of Federal Aid. This project will highlight the changes, both climatically and socially, which contributed to the differences in

the ways both storms affected the state. Among these factors climatically was the warmer winters that have been normal for the last few years whereas the winter of 1948 had been mild compared to previous winters. The other contributing factor in the most recent storm was the state's reliance on electricity the loss of which dealt a major blow to residents.

Steve Sherwood (58)

ADVISOR = Steele Becker

Christmas/New Years Eve 2006 Ice Storm - Effects on Aviation Transportation in the Great Plains (Colorado, Nebraska, South Dakota, Kansas, Iowa, Missouri)

Due to the ice storms in late December 2006, catastrophic damage resulted in the national aviation infrastructure. As a result, aviation transportation was at a stand-still in the Great Plains region during the holiday season. Many airports, including Eppley Airfield out of Omaha and the Kearney Municipal Airport, had to be shut down for considerable lengths due to these ice storms. Winter storms affected peripheral areas such as Denver International and Kansas City International by dumping countless inches of snow along with intense wind gusts, which experienced even more delays. Bad winter weather, loss of navigational aids, and the temporary halt of most activity in the airport environment lead to problems with passengers who were stranded. Eventually, airports found ways to get passengers moving, and resume commerce. My paper focuses on these problems, and explains what the affects these winter storms had on the aviation sector.

Physics and Physical Science**Adam Sevenker (59)**

ADVISOR = Trecia Markes

Changes in Student Models of Force and Motion in Activity-Based Physics

With a three-year FIPSE grant, it has been possible at the University of Nebraska at Kearney (UNK) to develop and implement activity-based introductory physics at the algebra level. Many misconceptions about motion and force persist after instruction. Pretest and posttest responses on the "Force and Motion Conceptual Evaluation" (FMCE) are analyzed to determine the models that students use. Responses are divided into expert model (correct answer), student model (common

incorrect answer), and null model (all other answers) categories. Students are categorized as being in an expert state (mostly expert model answers), a mixed state (mostly expert and student model answers), a student state (mostly student model answers), or a null state (mostly null model answers). The change of state is identified for each student in seven categories of questions. The changes are analyzed to determine the effectiveness of activity-based instruction.

*This work was supported by the US DOE's FIPSE Grant No. P116B51449.

PROFESSIONAL/APPLIED SCIENCES

Business & Technology

Family Studies and Interior Design

Avani Amin (60)

ADVISOR = Tami Moore
Homeschooling in Nebraska

Homeschooling is not a new concept in the state of Nebraska. It will be defined historically and in its current context. Statistics on homeschooling, locally and nationally, are presented and analyzed. An exploration of the process is also provided for further understanding and discussion.

Alison Copple (61)

ADVISOR = Janice Kimmons
The Accommodating Home: Accessible Design for Aging in Place

The purpose of this project was to create an inclusive resource for homeowners that provides information on accessible housing and aging in place, how accessible design can have a positive impact on any homeowner, and what steps homeowners can take to create an accessible home. After preliminary research and informal conversations with homeowners it was surmised that there is a lack of education about how home design can negatively or positively affect a homeowner's living experience. Many resources that are available concerning accessible design and aging in place are directed towards

designers and contractors. Other resources address specific issues and do not cover the broad topic of aging in place in relation to the home environment. Points on the most important topics were compiled. Additional resources were also provided for further information.

Education

HPERLS

Megan Costello (62)

ADVISOR = Kate Heelan
Changes in the Prevalence of at risk of overweight or overweight in children

The prevalence of children at risk of overweight or overweight (OWT) has increased in the United States from 29.8% in 1999-2000 to 37.2% in 2003-2004 (Ogden 2006). The purpose of this study was to evaluate the changes in prevalence of OWT 4th and 5th grade children from 1994 to 2006 in Kearney, Nebraska. In 1994, 2001 and 2006 4th and 5th grade students were measured for height and weight and body mass index (BMI) was calculated. Prevalence of OWT was defined as a BMI above the 85th percentile using the BMI percentiles for age and gender from the Center of Disease Control growth charts.

Year	N	BMI (kg·m ²) (mean ± STD)	Prevalence of OWT (%)
1994	362	18.63 ± 3.62	25
2001	339	18.92 ± 3.52	28
2006	117	19.25 ± 3.79	33

In past 12 years, the prevalence of OWT among children in Kearney, NE has increased 24%. If the trend continues as a 2% increase each year, 50% of children will be OWT by 2020.

Andy Craig (63)

ADVISOR = Kate Heelan
Accelerometer Compliance in School Age Children

Developing accurate and reliable ways to quantify physical activity (PA) in children continues to be a research priority (NIH, 1996). Accelerometry provides objective measures of daily PA in children with real-time storage capability. However the technology is not effective if the child doesn't wear the monitor. The purpose was to determine if younger children (1st and 2nd grade) are more compliant

in wearing an accelerometer in comparison with older children (4th and 5th grade). Two hundred six children (91 younger, 115 older) were given an MTI Actigraph Accelerometer to wear for four consecutive days. Participants were advised to wear the monitor at all times, except for sleeping or showering. Compliance was evaluated for each day the monitor was worn using procedures established in a previous study (Welk et al. 2007). If more than three periods of 20 consecutive minutes of zeros were detected during the day (07:30-20:00), data from that day was considered "missing". Participants with more than two days of missing data were considered to be noncompliant. Compliance will be compared between the two groups.

Allison Swendener (64)

ADVISOR = Kate Heelan

Energy Intake, Calcium Intake and Glycemic Load in 9-11 yr Old Children

Obesity continues to increase in the United States as eating behaviors progressively decline and children enter adolescence. The purpose of this investigation was to examine daily energy intake, calcium intake and glycemic load in 9-11 yr old children. 69 children completed the Youth/ Adolescent Food Frequency Questionnaire. The average energy intake was 1896.1 ± 548.4 kcal/day with 52% from carbohydrate, 32% from total fat, and 17% from protein. A strong positive association was found between energy intake and glycemic load ($r=0.946$). Thirty eight percent of participants met the RDA for calcium intake of 1300 mg/day (1637.0 ± 285.7 mg/day), while 62% did not (937.6 ± 235.3 mg/day). Participants who met the recommended calcium intake consumed significantly more milk. In addition, participants with higher energy intake had significantly higher glycemic load. Educating children about food choices is essential.

GRADUATE STUDIES

Biology

Rachel Anschutz (65)

ADVISOR = Wyatt Hoback

Are Carrion Beetles (Coleoptera), Specifically The American Burying Beetle (Nicrophorus americanus), Affected By Lights?

The endangered American burying beetle (ABB), *Nicrophorus americanus*, is a nocturnal insect that may be negatively affected by lights. A lab experiment with 27 ABB was conducted to determine which light types were more attractive to ABB. Eight ABB were attracted to mercury vapor lights and 7 were attracted to UV lights which was significantly higher than other choices (chi-square=13.18, df=6, c.v.=12.59, $p<0.05$). Also, three study sites were established to test the effects of three types of lighting on carrion beetles. Beetle choices were light alone traps, light with carrion traps, and carrion only traps. A total of 112 nocturnal beetles including 32 ABB were trapped over 24 nights. ABB were more attracted to lights than other Silphidae examined suggesting that light pollution has played a role in their decline. Within ABB range, choice of lighting should be carefully considered, and conservation measures including light shields should be implemented.

Jessica Jurzenski (66)

ADVISOR = Wyatt Hoback

Insects Reveal Saltcedar has Little Effect on Biodiversity

Saltcedar (*Tamarix* spp.), an invasive tree, has become abundant on Nebraska waterways and previous research suggests that ants may be effective bioindicators of ecosystem change. Ants were collected from bait cards within research plots at Harlan County reservoir. Forty-six research plots were sampled, of which 21 had no saltcedar, 14 had low density saltcedar and 11 had high density saltcedar. We identified 6,854 ants representing 11 genera. Total genera richness was highest in plots without saltcedar (11 genera). The low density plots and high

density plots had 10 and 8 ant genera, respectively. Statistical comparisons of diversity, richness and abundance showed no significant differences between genera for the three conditions. The high density plots had a higher percent composition for an opportunistic genus. However, there were three genera that had nearly 100% occurrence in plots without saltcedar. This information will help monitor the effects of saltcedar infestations on invertebrates.

Anjeza Pashaj (67)

ADVISOR = Kimberly Carlson

Changes in Glutathione-S-transferase Gene Expression in Large Caged Populations of Drosophila melanogaster

Drosophila melanogaster is a model organism for studying the genetics of aging, in which the results are directly applicable to humans. One aging theory is the association with an increase in oxidative stress and free radical production. To circumvent this process, detoxification enzymes are employed. A family of detoxification enzymes, glutathione S-transferases (GSTs), is found in all organisms, with orthologs in humans and D. melanogaster. The hypothesis for this study is that aging is the result of a decrease in the transcription and translation of the GST genes over time. To test this hypothesis, large caged populations (15,000) of D. melanogaster were sampled over a period of 89 days and survivorship curves analyzed. Females were collected to determine changes in levels of GST mRNA by quantitative reverse transcription-polymerase chain reaction. This project will provide insight into the mechanistic regulation of aging as a result of GST expression.

Business Management

Joshua Tolin (68)

ADVISOR = Susan Jensen

The Evils of Email: How this Communication Tool Causes Conflict

Email as we know it today was first created in 1971 by Ray Tomlinson. He did not think it was a big deal, and in fact told his colleague not to tell anyone that he had spent work time on it. Tomlinson's playtime on that day has forever changed the way people communicate, both at home and at work. Email has greatly altered the

way one thinks, mingles, and works with those around us. A 2005 Stanford study shows that 44 percent of users' time online is spent on communication via email. This study investigates email as a tool for communication and how its characteristics are a cause for concern in amplifying interpersonal conflict. Moreover, this research offers usage recommendations that will allow users to get the most out of email while decreasing its possible negative effects on communication.

Communication Disorders

Crystal Hinrichs (69)

COPRESENTER = Laura Bradshaw

ADVISOR = Michelle McKelvey

Social Communication Interaction Patterns in People with Aphasia

The purpose of this research study was to identify and compare changes in the social, interactional, and participatory domains of the communication environments of people with aphasia and their communication partners. Data was collected through surveys and follow-up interviews with five persons with aphasia and their spouses. Data reflects the person with aphasia's degree of communication in specific social environments, their spouse's perception of the person with aphasia's communication abilities, and their social responsibilities both before and after acquiring aphasia.

Counseling & School Psychology

Michael Bishop (70)

COPRESENTERS = Adriana Bustamante,

April Follmer, Catherine Hock, Linda Shaw

ADVISOR = David Hof

What do I do with this Information, Advocacy In Action

At the workshop "What Do I Do With this Information? Advocacy in Action," the participants will learn about social justice orientation, advocacy, and the ACA Social Advocacy Intervention Categories and Associated Competencies. Based on this new knowledge, attendees will build an advocacy plan for one of the issues discussed during the conference or for a need within their service communities. The advocacy plan will identify objectives related to the selected issue. For each objective, the advocates will outline intervention

categories and competencies. Then, they will develop activities designed to achieve the desired outcome and identify the people responsible for carrying out the activities. Finally, they will recognize available resources, colleagues, and organizations with whom they can collaborate.

Time spent in MVPA will be averaged for all participants and compared between schools.

Education

Barbara Mohrman (71)

ADVISOR = Joan Lewis

Catch Me If (While) You Can - Strategies to Intervene in Student Failure

This research project is a study of the relationship between prevention and intervention strategies implemented and the number of student failures in the 8th grade at a rural Nebraska Middle School. The project highlights both prevention and intervention strategies. It provides quantitative data with student failure rates for a three year period. Three classes are followed through their 6th - 8th grade years. The first class is a baseline year with no interventions, the second class with one year of interventions and the third class with two years of interventions in place. Qualitative data is included with student comments about the intervention strategies.

HPERLS

Pamela Janulewicz (72)

ADVISOR = Kate Heelan

How active are children in PE classes?

Physical education (PE) classes are the ideal way to reach a large number of children in efforts to increase daily physical activity as 97% of elementary school students take PE (Ross et. al., 1985). However, it has been suggested that children only receive approximately 3 minutes of vigorous exercise during a select PE class (Simons-Morton et. al., 1993). The purpose of this study was to determine how much time 4th grade students are actually spending in moderate-to-vigorous physical activity (MVPA) during a 30 minute PE class. Fourth grade students from 3 elementary schools wore an MTI Actigraph accelerometer for 4 consecutive days. Activity counts were collected every 15 seconds and uploaded to a statistical analysis program (SAS) for processing. Time spent in MVPA will be evaluated during PE time using activity thresholds established by Trost et. al (2001).

Oral Presentations – Room 310

- 1:30-1:45 **Melissa Jakub**
ADVISOR = Elizabeth Peck
A Modern Greek Tragedy: Eugene O’Neill’s Use of Greek Elements in The Hairy Ape
- 1:45-2:00 **Sarah Jones**
ADVISOR = Michelle Lang
Iconography of Women in Art Nouveau as seen in the work of Rupert Carabin
- 2:00-2:15 **Jan Treffer Thompson**
ADVISOR = Charles Peek
An Empty Vessel: Eden Bower in ‘Coming, Aphrodite!’
- 2:15-2:30 **Hikari Maekawa**
ADVISOR = Valerie Cisler
The Evolution of the Piano Trio: Effective Stylistic Interpretation through Comparative Analysis of Mozart, Beethoven, Debussy, and Shostakovich
- 2:30-2:45 **Kyle Petersen**
ADVISOR = Ruth Brown
Sugar, Mud and Substance: Analyzing Political Advertisements Aired for Federal Races During the 2006 General Election in Nebraska
- 2:45-3:00 **Joshua Tolin**
ADVISOR = Greg Broekemier
Perceptions of Traditional vs. Web-based Classes from Students and Faculty with No Web-based Class Experience
- 3:00-3:15 **Christopher Silva**
ADVISOR = Gerry Stirtz
Alternative Spring Breaks

Oral Presentations - Room 312

1:30-1:45

Grant Sorensen

ADVISOR = David Smith

Effects Of Black-Tailed Prairie Dogs On Mixed Grass Prairies In Central Nebraska

1:45-2:00

Megan Jones

ADVISOR = James Gilbert

Motivations for Drinking: A Self-Report of Members of Alcoholics Anonymous

2:00-2:15

Shannon Thompson

ADVISOR = Theresa Wadkins

Academic Dishonesty Among College Students

2:15-2:30

Brindi Utemark

ADVISOR = Richard Miller

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2:30-2:45

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Jerod Petersen

ADVISOR = Maha Younes

The Changing Landscape of Rural America

ORAL PRESENTATIONS

BEHAVIORAL & SOCIAL SCIENCE

Criminal Justice

Megan Jones (73)

ADVISOR = James Gilbert

Motivations for Drinking: A Self-Report of Members of Alcoholics Anonymous

The purpose of this study was to generate insight regarding motivations that cause people to drink to the point of alcoholism. A survey was developed consisting of reasons for drinking, including social events, suppression, disinhibition factors and whether or not other members of the family drank. It was hypothesized that the most common motives for drinking would include such reasons as to escape the stress and problems of daily life and to feel more comfortable in social situations. Twenty participants, all members of Alcoholics Anonymous (AA) completed this survey. The results demonstrated that although most participants had family members that drank, they did not feel that that was the reason they began drinking themselves. Accordingly, the current study promotes the belief that having a family history of alcohol may influence an individual to begin using alcohol, but it is not the only, nor possibly the most significant, contributing factor.

Political Science

Michael Gruszczynski (74)

ADVISOR = Joan Blauwkamp

The Effects of Approval Ratings on Presidential Media Coverage

There is a large body of political research dealing with the media's use of polls in reporting the news. Much of this research has examined how the media affect the polls, but few studies have examined the reverse; the effect polls have on the media. This research was carried out in order to

find whether changes in the president's approval rating affected the tone of his media coverage. The research design was inspired partly by the research of Thomas Patterson, who studied the effects of candidates' standings in the polls on the tone of media coverage the candidate receives. This research revealed a weak relationship between presidential approval ratings and the tone of media coverage; however, the lack of a statistically-significant relationship between the two raises considerable questions about the so-called "permanent campaign."

Psychology

Shannon Thompson (75)

ADVISOR = Theresa Wadkins

Academic Dishonesty Among College Students

The present study investigated the effects of academic motivation, academic integrity, attitude toward cheating, and self-efficacy on cheating behaviors of college students. Participants completed a puzzle-solving task, in which some of the puzzles were not solvable unless a participant cheated. In order to create a situation in which cheating could be to the participants' advantage, three different levels of motivation were used. One group was offered a 20 dollar reward for the highest score, the second group's scores were made public, and the third group was told that only the experimenter would know their scores. There was not a significant difference in the cheating behaviors of the three groups. A significant negative correlation was found between participants' self-reports of cheating behaviors and how dishonest they rated those behaviors. Participants who cheated on the puzzle task had significantly higher self-efficacy scores than those who did not cheat. Implications for these findings are discussed.

Brindi Utemark (76)

ADVISOR = Richard Miller

Urban and Rural Helpfulness: Willingness to Help Others Based on Familiarity and Attachment

Differences between urban and rural helpfulness to different types of requestors were examined. High-school students responded to one of nine helping scenarios and completed an attachment scale. Individuals from rural areas were more likely to help than were urban residents. Those with certain attachment types were less willing to

help others. Gender and relationship to the requestor also affected helping.

Social Work

Jerod Petersen (77)

ADVISOR = Maha Younes

The Changing Landscape of Rural America

The intent of this qualitative case study is to explore how immigration impacts the business and human service landscape of one Midwestern rural community. Business leaders in healthcare, social services, education, criminal justice, commerce, and more were interviewed. The outcome reveals the perspective, adaptation process, and concerns of businesses as they experience growing pains, and embrace new roles and practices.



Art & Art History

Sarah Jones (78)

ADVISOR = Michelle Lang

Iconography of Women in Art Nouveau as seen in the work of Rupert Carabin

In the last decades of the nineteenth century, the European art community created a new style of art which came to be called Art Nouveau or the “new art”. One artist who worked in this innovative organic style was Rupert Carabin, a Parisian furniture maker and sculptor. His sculpture and furniture can be visually interpreted as commentary on the male reaction to modern women and their increasingly assertive role in this newly formed world. Carabin was an important figure in fin-de-siecle decorative arts about whom little study has been done. Visually, Art Nouveau artists, including Carabin, found inspiration in nature. Most examples of Art Nouveau decorative art objects use a very specific visual language which includes flowing arabesques and whiplash curves invoking the delicacy of plant vines or the wild flowing hair of a sensuous woman.

Communications

Kyle Petersen (79)

ADVISOR = Ruth Brown

Sugar, Mud and Substance: Analyzing Political Advertisements Aired for Federal Races During the 2006 General Election in Nebraska

Television advertising plays a dominant role in determining the outcomes of elections. However, most analysis of campaign ads is relegated to studying positive versus negative approaches and their effects on voter turnout. Generally, political advertising research does not include analysis of production techniques or specific emotional and rational advertising appeals, which are critical components of commercial advertising. This research paper analyzes the content of television advertisements aired for federal races in Nebraska during the 2006 General Election. Advertisements are coded based on their issue content, focus, setting, cinematography and other aspects to cover all facets of advertising methods utilized in the political ads.

English

Jan Treffer Thompson (80)

ADVISOR = Charles Peek

An Empty Vessel: Eden Bower in ‘Coming, Aphrodite!’

This paper focuses on Eden Bower in “Coming, Aphrodite!” as a victim of the forces Cather considers hostile to artists—small-town materialism and traditional gender roles—and as a pseudo-artist who develops only her physical attributes. In contrast, Don Hedger rejected such restrictions and maintains a vision of art as an end in itself, reflecting Cather’s views. Linda Pannill explains that in *Youth and the Bright Medusa* even women who are true artists are forced to become pretty vessels, which is why Cather makes them performers rather than visual artists. Eden’s exchanges with Hedger are opportunities for her to reveal and develop an artistic sensibility. He desires to share his artistic vision with her, yet she fails to understand and prefers the faux-artistry of materially successful Burton Ives.

Beth Robertson (81)

ADVISOR = Nyla Khan

Navigating Identity: Postcolonial and Transnational Relationships in Divakaruni's Mistress of Spices

In *Mistress of Spices*, Chitra Banerjee Divakaruni tells the transnational tale of a woman born in Kashmir who now lives in Oakland, California. The main character, Tilo, is forced to negotiate her South Asian identity in this Western setting while she is charged with the task of helping other South Asian immigrants do the same. Through postcolonial and psychoanalytic readings I will argue that Tilo's task not only involves South Asian, Western, and diasporic identities, but that her task is further complicated by her own lack of identity. Divakaruni's Tilo occupies a space between the self and not-self through much of the novel. During her claiming of the self she becomes romantically drawn to a man she assumes is a white American—in fact he is Native American—and struggles with the notion of the pure identity advocated by her mentor. Tilo's cross-cultural relationship with this Native American Indian leads her to analyze her own "Indianness." In this paper I will discuss Divakaruni's use of this relationship to explore the relationship between the Native American Indians—mistaken by early European explorers for Indians of the Spice Islands—and South Asian Indians. Both communities still struggle with the profound effects of colonialism regardless of individual location.

Melissa Jakub(82)

ADVISOR = Elizabeth Peck

A Modern Greek Tragedy: Eugene O'Neill's Use of Greek Elements in The Hairy Ape

Contrary to Arthur Miller's contention that modern writers failed to recognize the tragic potential of the common man (The Tragedy of the Common Man [1948]), Eugene O'Neill's drama, *The Hairy Ape*, published twenty-six years earlier is a pioneering contribution to modern Greek drama that clearly embodies the primary characteristics of Greek tragedy. Not only does O'Neill draw his tragic protagonist, Yank, from the depths of the common working class society, but he also artfully subscribes the text of *The Hairy Ape* to the blueprint for tragedy described in Aristotle's Poetics. By providing a detailed analysis of O'Neill's incorporation of Greek dramatic elements - including tragic plot development, reliance on the prescribed characteristics for tragic protagonists, the use of

the tragic chorus and the deus ex machine ending - my study proves that in *The Hairy Ape* O'Neill masterfully applied and revised Greek dramatic strategies, reshaping them to make them suitable for modern audiences. Similarities between O'Neill's engine room stokers and the Greek tragic chorus, as well as Yank's sudden death with the deus ex machina ending, reveal that a complex and complete tragic world exists within *The Hairy Ape*. O'Neill's use of not one, but four distinct choral groups that comment upon the dramatic action while adhering to the Greek practices of song and dance, convincingly illustrates O'Neill's familiarity with traditional elements of Greek drama. In addition, O'Neill's liberal adherence to the traditional plot structure of developing a tragic hero offers contemporary insight to the struggling protagonist. Ultimately, my study demonstrates that O'Neill's occasional alterations of various Greek tragic elements fit within the parameters of Greek drama and are justified as successful attempts to mold a modern tragic hero.

Music & Performing Arts**Hikari Maekawa (83)**

ADVISOR = Valerie Cisler

The Evolution of the Piano Trio: Effective Stylistic Interpretation through Comparative Analysis of Mozart, Beethoven, Debussy, and Shostakovich

This study is designed to provide a comparative analysis of four contrasting works for piano trio (piano, violin, and cello) that will serve to enhance an understanding of the style characteristics that affect performance interpretation. The works studied and performed are Piano Trio in C Major, K. 548, by W. A. Mozart; Piano Trio in C Minor, Op. 1, No. 3, by Ludwig van Beethoven; Piano Trio in G Major, by Claude Debussy; and Piano Trio in E Minor, Op. 67, by Dmitri Shostakovich. Each work is examined through Contextual Analysis (including musical, social, historical, and cultural influences), Theoretical Analysis (including fundamental musical elements and compositional techniques related to form and structure), and Style Analysis (including range, pedal, harmonic color, expressive indications, and idiomatic use of the instruments) and their implications on effective performance interpretation. The study concludes with sample performance clips that highlight the stylistic differences between the works.

NATURAL & PHYSICAL SCIENCES

Biology

Grant Sorensen (84)

ADVISOR = David Smith

Effects Of Black-Tailed Prairie Dogs On Mixed Grass Prairies In Central Nebraska

Given the coevolutionary past between grasses and grazers, it was hypothesized that black-tailed prairie dogs (*Cynomys ludovicianus*) increase the species richness and the net above-ground primary productivity of plants (NPP) at mixed grass prairie sites. Ten temporary exclosures were established at each of 3 prairie dog colonies in south central Nebraska. The temporary exclosures aided in the measurement of NPP, utilization rates, species composition and abundance, and the coefficient of conservatism. There was no significant difference in total utilization (mean=28%). There was a significant difference in NPP among sites ($P=0.013$) and among the three treatments ($P=0.009$). In addition there was a significant difference in NPP between the control (mean=0.48 g m⁻² d⁻¹) and the temporary protected treatments (mean=1.19 g m⁻² d⁻¹, $P=0.009$). Plant species richness was higher within colonies (81 species total) than in the three control areas (57 species total). The data demonstrates that prairie dogs can increase NPP and species richness.

PROFESSIONAL/APPLIED SCIENCES

Marketing

Joshua Tolin (85)

ADVISOR = Greg Broekemier

Perceptions of Traditional vs. Web-based Classes from Students and Faculty with No Web-based Class Experience

As the reach of technology expands and interest in asynchronous web-based classes increases, it is important to understand what students and faculty believe about such classes. Students and faculty from a variety of academic disciplines were surveyed at a medium-sized Midwestern university regarding their perceptions of web-based and traditional classes. The results of this study show the similarities and differences between students who have never taken a web-based class and faculty members who have yet to teach a web-based class. By understanding preconceived notions about web-based classes from both groups, institutions offering such courses can be better equipped to foster realistic expectations and communicate information that addresses the concerns that such students and faculty may have. In doing so, these institutions can benefit from both increased student satisfaction in these courses and greater willingness of faculty members to teach web-based classes.

Teacher Education

Christopher Silva (86)

ADVISOR = Gerry Stirtz

Alternative Spring Breaks

With the participation of 30+ students, the Alternative Spring Breaks program provides hands-on opportunities for students to serve communities across the United States of America during UNK's spring break. These opportunities try to develop students' sense of citizenship, service-learning and social justice. During 2007, UNK sponsored 3 trips to the following locations: New Orleans, Denver and South Dakota. The presentation will detail the planning, participation and outcomes felt by the students.

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