

2005 Apeiron Schedule of Events

- 12:00 p.m. - 1:00 p.m. Student Registration and poster set up
- 1:00 p.m. - 1:20 p.m. Opening Remarks (Washburn Room B)
Ron Wasserstein, Vice President for Academic Affairs
- 1:30 p.m. - 2:30 p.m. Oral Presentations/Performances (Memoria Union)
- 2:40 p.m. - 3:50 p.m. Poster Presentations (Washburn Room A)
- 4:00 p.m. - 5:00 p.m. Reception (Washburn Room B)
- 5:00 p.m. - 6:00 p.m. Students take down any remaining displays.

Oral Presentations — Boswell Room

1:30 - 1:45 p.m.

Slices of Life: Poems from a Yellow Kitchen

Adrienne Halpin

Mentor: Amy Fleury, English

“Slices of Life” is a collection of poems that uses food as a central metaphor to discuss life’s usefulness and abundance. While food is a necessary aspect of mere existence, it also is a mainstay of celebrations, ceremonies, and even respites through the busyness of life that so easily crowds out real living. The kitchen is surely the center of the home, and the gathering place of the family. This collection attempts to celebrate living a full and truly delicious life by enjoying the beauty of living to the very last drop.

1:45 - 2:00 p.m.

Moral Responsibility, The Infinite Good, and Man's Failure: The Development and Relevance of Aristotelian Ethics

Virgil Barnard

Mentor: David Freeman, Political Science -- Geography

What is a human? What is man's end? Why does man fail to reach his end? Is man's ignorance an excuse for his failure? Are man's bad choices the reason for his failure? Do bad luck and the forces of circumstance ultimately lead to man failing to attain happiness? Is Aristotle's ethical theory relevant today? These are the questions that I will suggest answers for.

2:00 - 2:15 p.m.

Aristotle: The Examined Life

John Parks

Mentor: David Freeman, Political Science - Geography

This is an exploration into the beliefs of Aristotle, more precisely, his belief in self-examination as a key to finding ethics. It is also a look into how this belief fits into the naturalistic fallacy and existentialism, if it in fact does so at all. Within each of these examinations, I look for relevancy in today's world. Does Aristotle still hold importance in a world of globalization, pre-emptive strikes and the internet? Absolutely. Do the naturalistic fallacy and existentialism hold the same importance? No.

Oral Presentations — Cottonwood Room

1:30 - 1:45 p.m.

Depictions of Satan During the British Renaissance

Mark LaVoie

Mentor: Maureen Godman, English

Using art and literature for the period, I will be presenting different depictions of Satan during the British Renaissance. The depictions will include the physical aspects of Satan (and of devils in general), as well as the non-physical aspects, such as motivations and characteristics.

1:45 - 2:00 p.m.

Catholic Tradition in Marlowe's Dr. Faustus

Abigail Bair

Mentor: Mo Godman, English

Christopher Marlowe's *Dr. Faustus* clearly follows a long tradition of Catholic theology in English writing. Using techniques that mirror morality plays like *Everyman*, Marlowe gives us tragedy with a twist. By examining both plays at their points of theological cohesion we can discern the spiritual roots of drama in an increasingly secular society.

2:00 - 2:15 p.m.

Isaac Backus and the Connection of American Religion and Government

Matthew Wasserstein

Mentor: Alan Bearman, History

My paper attempts to show Isaac Backus' importance in establishing the separation of church and state while connecting religion and government in America. In this paper, I explore the struggle for religious liberty in Colonial America as well as the early period of the republic. Backus is compared with other advocates of religious liberty. I hope to show through this paper the importance of Backus' work in connecting Christianity with American government while simultaneously helping to separate church and state.

Oral Presentations — Kansas Room

1:30 - 1:45 p.m.

Social Dynamics of Captive American Black Bears

Gwendolyn Meinecke

Mentor: Joanne Altman, Psychology

This study explored the relationship among captive Black Bears (*Ursus americanus*) as a male becomes sexually mature. An adolescent male and 2 adult female bears are housed together at the Topeka Zoo. Bears were observed using an instantaneous scan sampling method. During the male's adolescence, preliminary data show that the females were aggressive towards the male, but not each other. This supports previous observations of bear-bear aggression in which adults attack strange bears in their territory. However, data are still being collected through the male's maturation. Results regarding changes in social dynamics of the group at maturity will be discussed.

1:45 - 2:00 p.m.

Lewis Structures of Sulfur Dioxide, Sulfur Trioxide, and the Sulfate Ion Using Quantum Chemical Calculations

Zeb Kramer

Mentor: Stephen Angel, Chemistry

Lewis dot structures of SO^2 , SO^3 , and SO_4^{2-} are inconsistently presented in elementary chemistry textbooks. These texts and several articles published in the *Journal of Chemical Education* either favor structures generated using the *octet rule* or those that reduce the formal charges on the constituent atoms. It is the purpose of this study to elucidate the most relevant Lewis dot structure of each molecule using *ab initio* quantum chemical calculations. Justification of the model chemistries are assessed by comparing calculated vibrational frequencies and force constants along with bond lengths, population analysis methods, and additional output available in the software packages *Guassian '03* and *Spartan '04* the appropriate Lewis structure of these molecules are presented.

2:00 - 2:15 p.m.

Ultrasound: A Baby's Story

Sara Phelps, Billie Webb

Mentor: Kelley McDonald, Allied Health

This case study began with the patient at 24 weeks gestational age, presenting for a routine ultrasound examination. The fetus appeared with bilateral club feet, and possible lemon sign. The patient was referred to a doctor who specializes in high-risk pregnancies. Throughout the pregnancy the patient received continuous ultrasound examinations to ensure the safety of the fetus. At plus 36 weeks gestation, the fetus had been diagnosed with trisomy 18, a neural tube defect, bilateral clubbed feet, was developing hydrocephalus and had a ventricular septal defect. The doctor discussed the birth plan with the patient and her husband. They discussed having the baby at Kansas University Medical Center where the ventricular septal defect and the neural tube defect could be repaired. They decided on having a Cesarean section at KUMC.

2:15 - 2:30 p.m.

Gelatinase Activity of Enterococci from Public Places

Cara Copp

Mentor: Ronald Ash, Biology

Enterococci are bacteria responsible for many hospital-acquired infections. Several proteins, i.e., virulence factors, have been implicated in the disease process of these organisms. I examined the production of gelatinase, a metalloprotease virulence factor, by *Enterococci* isolated from non-clinical sites. Assay of gelatinase by gelatin hydrolysis demonstrated that 47% of the isolates were positive for this trait. Polymerase chain

reaction, a technique for identifying DNA sequences, indicated that 56% (an additional 9 isolates) possessed the gene for the enzyme. *In vitro* analysis of extracellular gelatinase demonstrated quantitative differences in the amount produced among the *Enterococci*. The enzyme produced by isolated bacteria had characteristics consistent with its metalloprotease character. Whether quantitative differences in gelatinase production affect the virulence of *Enterococci* remains to be tested. Reasons for the lack of phenotypic expression of the gelatinase gene in some organisms is not yet understood. The results demonstrate the widespread occurrence of the gelatinase virulence factor in non-clinical isolates.

Oral Presentations — Lincoln Room

1:30 - 1:45 p.m.

The Effects of Physical Attractiveness of Male and Female Job Applicants in the Negotiation of Salaries

Lauren Markward

Mentor: Sarah Ubel, Communication

Joy Koesten, Communication

Pat Kosinar, Communication

Meredith Moore, Communication

It has been demonstrated in past studies that women may not face an equal playing field when negotiating salaries. It has also been demonstrated in past studies that those who are attractive may reap benefits simply on the basis of appearance. This study analyzed the interaction of three variables; sex of job applicants, sex of negotiator and the attractiveness of job applicants, in the process of a salary negotiation. This study tested the interaction of those variables to see whether sex or attractiveness produced differing results in the initial and final salary offers. The attractive individuals fared the best in the initial salary offers and the attractive males benefitted most from intersection of the two variables by receiving the highest initial salary offers. Also, the attractive males benefitted because respondents indicated in their reasons for the initial salary that the attractive males were the most likely to negotiate as opposed to the other three groups.

1:45 - 2:00 p.m.

“Enemy Combatants” in the “War on Terror”

Jacob Phelps

Mentor: Steve Cann, Political Science -- Geography

I will provide an overview of a comprehensive research paper I did on the subject of enemy combatants in the war on terror. This will include a position statement; an overview of the legal history of the enemy combatant doctrine; a review of three key decisions by the US Supreme court in June 2004; some review of the aftermath of these decisions, including an update since June 2004, and a few observations about what the future might hold. This is a vital topic impacting our nation in all branches at this time. Age-old considerations about the power of the president in times of war, and the need to protect civil liberties, are implicated by this issue, in the context of a new kind of war, called the “war on terror.”

2:00 - 2:15 p.m.

The Effect of Secondary School Size on Self-Efficacy for Self-Regulated Learning

Jessica Bergmann

Mentor: Joanne Altman, Psychology

This study investigated the effect of secondary school environment on self-efficacy for self-regulated learning. Undergraduate students completed a demographic survey, which gathered information regarding their secondary schools, and a Self-Efficacy for Self-Regulated Learning Scale. The participants were categorized into groups based on the school they attended: small, medium, or large public schools, parochial schools, or home schools. The data suggest that participants from home schools have significantly more self-efficacy for self-regulated learning than do those from large public schools.

2:15 - 2:30 p.m.

Effects of Bases, Aldehyde Structures and Water in Solid-State Wittig Reactions

Kevin Kent

Mentor: Stephen A. Angel, Chemistry

Traditionally, the Wittig reaction requires the use of a strong base in an organic solvent for the synthesis of alkenes from ketones and aldehydes. Following a recent report of solid-state Wittig reactions, using a ball-milling machine, parameters effecting solid-state yields are reported, using alternate milling techniques. Trends of alkali- and alkaline-earth carbonates and phosphates were studied. Some effects of water on the reaction were also observed. Progress towards studying the effects of aldehyde

structures on the reaction is being made.

Oral Presentations — Shawnee Room

1:30 - 1:45 p.m.

Comparing China and India in the Offshore Software Outsourcing Market

Yue Yang

Mentor: Gary Schmidt, Computer Information Sciences

The world spending on software offshore outsourcing has increased every year. From 1998 through 2003, offshore IT software and services spending has increased from \$2.5 billion to \$10 billion and the figure could reach \$31 billion by 2008. Currently the worldwide majority of software outsourcing clients are found in North America, Western Europe, and Japan with 65% coming from America, 24% coming from Europe, and 11% coming from Asia/Pacific. The worldwide main software outsourcing vendors, in order of preference, are India, Ireland, and Israel. However, China, Canada, Russia, and the Philippines are following but are making strides in closing the gap. Since India has been successful in becoming the most popular provider of offshore software outsourcing, the world, and in particular China, has been paying more and more attention to the benefits and opportunities of software outsourcing. This paper deals with markets that both China and India share, how each is marketing to the common markets, and how each plans to market to new markets. Since offshore outsourcing is one of the hottest areas in the world software market, India has historically been the leader among all software outsourcing vendor countries. The brisk and flourishing software market strongly encourages the rest of the world to join the outsourcing business. Compared to India, China is still at a disadvantage but with its current resources, with its new technology directions, and with its commitment to be a major player in the software outsourcing market, China intends to soon be a dominant player. This paper deals with the current differences, the China strategy for the future, and why China will be a future reckoning force.

1:45 - 2:00 p.m.

Searching for Zenas Crane: Part 1 "The Search"

Kelly Scott

Mentor: Steven Black, Physics --Astronomy--Geology--Engineering

Who was Zenas Crane? What did he do and how did he help Washburn? These were questions people presented to me, but to which I had no answers. In fact, everyone I asked did not know. All they could tell me was that Zenas Crane donated the observatory and telescope, and that all records of who he was and what he did were lost in the 1966 tornado that destroyed most of Washburn's campus. Essentially, all I had to

go on was a name (Zenas Crane), a telescope (Warner & Swasey 11.5 inch refractor), and the approximate time frame of when the telescope came to Washburn (1903). With this information, I began the search for the man, his origins, and his affiliation with Washburn. This presentation documents that search and answers the original questions posed.

2:00 - 2:15 p.m.

The Effect of Interactive Imagery on Recall and Judgments of Learning (JOLs)

Kelly Scott

Mentor: Michael McGuire, Psychology

The purpose of this study was to investigate the effect of interactive imagery on judgments of learning (JOLs) and recall performance. Researchers hypothesized that the use of interactive imagery would increase recall and confidence in participants. Confidence was measured by the magnitude of participant's JOLs. They also hypothesized that these increases would result in more accurate predictions of performance than those of prior studies and that the delayed JOL effect demonstrated by Nelson and Dunlosky (1991) would be replicated. Results indicated that participant's who used interactive imagery recalled significantly more and showed increased confidence in their recall abilities than those who did not. Further analysis showed that the delayed JOL effect was replicated but that JOL accuracy was not improved. Therefore, researchers concluded that interactive imagery does increase recall ability and confidence in those who use it and outline possible reasons why JOL accuracy was not improved.

2:15 - 2:30 p.m.

Phase 1 of the Synthesis of the Free Tetraazamacrotricyclic, [4⁶]Adamanzane

Patrick Porubsky

Mentor: Shaun Schmidt, Chemistry

The long-term goal of this research is the synthesis of [4⁶]adamanezane. This cage compound is being synthesized to investigate its coordination properties and possible medical applications. In this initial phase, two parts of the cage are being constructed using a modified Richman-Atkins approach: the singly protected triazamacrocycle, N-(p-toluenesulfonyl)-1,6,11-triazacyclopentadecane; and the diacid chloride, N,N-bis(chlorocarbonyl propyl)-p-toluenesulfonamide. IR and ¹H-NMR spectroscopy are used in the identification of the molecules isolated.

Performances — Vogel Room

1:30 - 2:00 p.m.

The Development of Lady X: From the Cradle to Grave

Lara Ballard

Mentor: Russell Burton, Sociology -- Anthropology

This performance focuses on my life story and how it can be used to generate social change in individual's life and in the social work system. My story is not the "standard" life story in that I am a physically challenged, Afro-American female, openly lesbian, from a predominantly poor background, who was declared a ward of the court and placed in a foster home at age 15. And while I have had to overcome many of the challenges associated with these too often stigmatized social statuses, my story is more about both overcoming and "benefiting" from a poverty stricken, abusive childhood. Although my story is no different from others who have had an abusive childhood, I have the hope that by sharing such personal life experiences with the audience I can generate social change in individual lives and the social work system.

2:00 - 2:30 p.m.

Franz Schubert and His Cello Quintet Op. 163

Sarah McQuere, Christina Craig, Aaron Martin, Lindsay Paul, Shannon Coffman

Mentor: Larisa Elisha, Music

Steven Elisha, Music

There are two parts of this presentation. In the oral portion we will start by discussing the life, creativity, and compositions of the composer Franz Schubert relating it specifically to his chamber music style. This will be followed by an analysis of the C major Quintet Op. 163, movement 1 for two violins, one viola, and two cellos. This is one of his greatest chamber music works. We will cover the specifics of chamber music form, instrument correlation, musical dialogue, and articulation. As well as his choice of dynamics, harmony, and musical colors. Descriptions will be highlighted by playing excerpts from the piece. Following the oral portion of the presentation, we, the Honors Fetter Quintet, will perform the first movement of this piece.

Documentary Presentation — W Room

1:30 - 1:45 p.m.

The Race for District 18

Tara Gillum, Alyssa Gerry, Sheena Smith

Mentor: Bob Beatty, Political Science -- Geography

This is a documentary film about the uphill battle for the 18th Senate District. It is a dramatic portrayal of the typical situation of the challenger versus the incumbent, only this version includes an unexpected ending.

Musical Performance

Carroll Chapel — 3:30- 4:00

3:30-4:00 p.m.

Straw: A Musical Composition by Aaron Martin

Aaron Martin, Jessica Halpin, Sylvia Klingbeil, Nadia Li, Rachele Bennett

Mentor: Larisa Elisha, Music

The group, comprised of two flutes, two pianos, violin, and cello, will perform the musical composition "Straw," written by Aaron Martin, the primary presenter, and cellist. The piece consists of five sections, "Table," "Matrioshka Dolls are Made from Wooden Logs," "Leaf," "Carpet," and "Pliers," each describing, with music, an object and its interaction with its surroundings. The composer will briefly discuss each section, after which, the group will perform the piece.

Poster Session — Washburn Room A

2:40 p.m.— 3:50 p.m.

1 *Study Skills as a Function of Academic Locus of Control and Self-Efficacy*
Jennifer Cavin, Blaine Landis

Mentor: Joanne Altman, Psychology

Previous research indicated that beliefs of control and self-efficacy influence academic outcomes. To understand what influences students to exert effort associated with successful academic outcomes, researchers examined the effects of academic locus of control and self-efficacy on reported use of study skills. Participants were categorized according to their internal or middle-internal locus of control, and their moderate or high self-efficacy. Results indicated participants with high self-efficacy reported significantly greater use of study skills.

2 *Searching for Zenas Crane: Part 2 The Real History*
Kelly Scott

Mentor: Steven Black, Physics--Astronomy--Geology--Engineering

In my search for Zenas Crane I found the man, his origins, and his affiliation with Washburn. The search, however, also revealed a lot of inconsistencies in what people recalled and in what was published. These problems stem from the lack of a compiled history of the donor and observatory. This presentation, therefore, focuses on the real history of Zenas Crane, the Washburn Observatory, and the Warner & Swasey telescope. The pictorial timeline shows the people and places as they were when history was made. It also creates a cohesive record with correct dates and events, the first of its kind. The presentation will also include in depth information about the architect and related Washburn history.

3 *Cytolysin Genes in Enterococci*
Melissa Estes

Mentor: Ronald J. Ash, Biology

Enterococci are bacteria found in the intestinal tract of man and other animals. These organisms are responsible for many hospital-acquired infections. Medical personnel and contaminated equipment are often responsible for transferring the bacteria to patients. *Enterococci* responsible for causing diseases in hospitals are capable of producing specific virulence proteins. In the present study, the presence of cytolysin, a virulence protein frequently associated with pathogenic *Enterococci*, was determined in organisms isolated from nonclinical sources. Culture and genetic techniques were used to examine the prevalence of cytolysin and cytolysin genes. The results demonstrate that many *Enterococci* isolated from public places were found to produce cytolysin. These same isolated bacteria

also contained genes for the proteins required for synthesis and transport of cytolysin. The results suggest widespread occurrence of cytolysin virulence genes in non-hospital environments.

4 *Synthesis of an Unsymmetrical 1,2-Dipyrrolylethene via Heck Type Reaction*
Scott Maley

Mentor: Sam Leung, Chemistry

Porphyrins are important molecules for many processes in living organisms. They are the core structures of chlorophyll as well as heme molecules. Pyrroles are the building blocks for porphyrins. In this project, an unsymmetrical pyrrole dimer was synthesized using a Heck reaction and a cesium fluoride mediated Wittig reaction. These types of dimers could be useful as precursors in the synthesis of some expanded porphyrins.

5 *The Washburn Writers Program: Poeticizing the Campus*
Dianne Graves, Kandis Barker, Lisa Hase

Mentor: Margy Stewart, English
Ann Callies, Educational Opportunity Program

Washburn Writers display various aspects of their efforts to draw entering first-year students into an intellectual community. This session demonstrates the results of their "poeticizing the campus" program. This program involves first-year students in writing about various sites on campus, with the results compiled into a guidebook for walking tours of the university.

6 *Web Information Tracking and Statistics Generation*
Matt Hamilton, Athelred Davis, Sharif Rahman

Mentor: Jack Decker, Computer Information Sciences

This project is a Java based application for collecting data about web page visitors and storing it in a MySQL database. Statistics about this information are then available via a JSP generated web site. Dynamically generated graphs and charts as well as mathematical statistics can help web page maintainers gauge who their visitors are and what capabilities they have.

7 *Viability of a Tech Center at Washburn University*
Jared Dyche, Matt Hamilton

Mentor: Gary Schmidt, Computer Information Sciences

In this project we examine the plausibility of a small business to provide services such as helping new students connect their computers to the Washburn campus network, providing enhanced security through antivirus, firewall and anti-spyware software, and removal of existing virus, spyware, and other malicious programs. In addition, the research for this project included viability of a tech center in various locations on and around the Washburn University campus. An analysis of operational expenses, operation variables, and employee

costs. Final analysis centered around the expected income of the tech center.

8 *Java 3D Modeling of a Virtual Robot Arm*

Jared Dyche, Justin Watts

Mentor: Bruce Mechtly, Computer Information Sciences

In this research, we attempt to create a virtual robot arm in Java 3D that can interact with a defined virtual world. In this case, our world is defined as a table and a set of objects that are on the table which our robot arm will pick up and move. By using Java 3D, a programming language designed to allow the modeling of 3D environments, we were able to eliminate the need for the development of a complicated algorithm to handle the simultaneous movement of all pieces of the arm. Instead, we were able to place the parts into a tree (a hierarchical structure, like an organizational chart) where each child inherits the animation from its parent. It was also helpful to be able to define a separate axis within our space (given by the standard x, y, and z axes) about which we could rotate a specific object, such as one of the "fingers" of the claw. To make control of the robot arm easier, we have begun work on a wireless control. By using the SuperWaba language, we were able to begin work on creating an interface between a PDA and the robot arm program where movement on different pads on the PDA causes motion by the robot arm such as extending/retracting and opening/closing the claw.

9 *What Factors Initiate Wide-Band Tracheid Development in Leaf Tissue Cultures of Prickly Pear Cactus?*

Caitlin McGhee

Mentor: Vic Landrum, Biology

Previous experiments have shown that wide-band tracheids (WBTs), novel water-conducting cells found only in desert-adapted plants of three families, can be initiated in seedlings by exposure to light in the range of 4000-10000lux, but not by dehydration, hormones, nutritional stress, or temperature stress. Two experiments were performed on how leaf tissue cell cultures of the cactus *Opuntia subulata* (Cactaceae) would respond to various light levels and to varying concentrations of three phytohormones (auxin, cytokinin, and gibberellic acid). Results indicate that WBTs in leaf cell cultures differentiated in response to low light levels (4000lux) but not to higher light levels, and that exposure to low cytokinin levels also initiated WBT development. However, light levels above 8000lux, as well as exposure to auxins and gibberellic acid, seemed to have an inhibitory effect.

10 *Effects of Increasing Salt Concentrations on Germination Rates and Leaf Vein Patterns of the Common Radish (*Raphanus Sativus*; Brassicaceae).*

Joseph Donald

Mentor: Vic Landrum, Biology

Increasing salinity of soils is of great concern to farmers, especially those who irrigate their lands, e.g., those in western Kansas. Radish seeds were exposed to increasing concentrations (0.05M-0.40M) of a solution containing sodium chloride (table salt) in order to

determine how this common crop plant would respond to salinity. Germination rates showed an inverse correlation to salt concentration, so as salinity increased, germination decreased in a linear manner. Leaf vein patterns were also analyzed.

11 *Security and Degree In Adult Attachment Patterns*

Jennifer Vega

Mentor: Mike Russell, Psychology

Studies on attachment have primarily involved infants. Only recently have attachment patterns in adults become an important topic of research. The purpose of the present study was to attempt to derive the types of emotional ties that exist in young adults. Participants were 68 undergraduate students from Washburn University. Participants were required to complete three questionnaires, each dealing with their relationships with parents, friends, significant others. The results of the study revealed significant differences in attachment areas between males and females.

12 *How Well Can Students Predict Future Test Performance?*

Gwendolyn Meinecke, Angela Burrell, Chelsea Moritz

Mentor: Michael J. McGuire, Psychology

How well can students predict future test performance? We examined this question by investigating whether certain factors influence students' predictions for future memory performance, referred to as judgments-of-learning (JOLs). To determine the possible occurrence of these factors, the effect of retention interval (48 hours or 1 week) on JOL magnitude and accuracy were examined. Another factor investigated was time of JOL (day of study and day of test), which was treated as a repeated-measures factor. Students studied word-pairs, predicted future memory performance for each word-pair, and received a recall test. Students' predictions were recorded (for JOL magnitude) and correlated with test performance to determine JOL accuracy. We hypothesized that students in the 48-hour condition would report higher JOLs relative to students in the 1 week condition. We also hypothesized that the JOLs made at time of test would be more accurate than JOLs made at time of study.

14 *Map Your Personality to a Cartoon Profile*

Jason Divis, Deborah McIntire

Mentor: Cecil Schmidt, Computer Information Sciences

Cartoon character profiles were analyzed for different values. With our input form, one can enter data and retrieve which cartoon character the entered data is most like.

15 *Classifying Music Styles Using Data Mining*

Yue Yang

Mentor: Cecil Schmidt, Computer Information Sciences
Jack Decker, Computer Information Sciences

Using computer programs to classify music is an interesting topic both in the field of computer science and the field of music. Musical styles can be grouped together according to their distinguishing features. This research project focuses on finding attributes that can be used to classify music using standard data mining algorithms. In this project, we only considered three styles: jazz, rock, and classical. These styles do not always have clear boundaries. The features we collected are also somewhat limited. We believe it is possible to find attributes that will provide better classifications, however, time constraints did not allow for it during this project. This paper discusses the processes we followed and software tools we created and downloaded for capturing music data. The paper also explains the calculations and meaning of the collected data and shows a comparison of the performance of a few representative classifying algorithms in the Data Mining tool Weka.

16 *Eye Adaptations of the Praying Mantids (*Tenodera ariaiforlia sinensis*) & the Fruit Fly (*Drosophila melanogaster*) to Their Different Environments*

Sara Jones

Mentor: Ursula Jander, Biology

In this experiment, two different insects' eyes (Praying Mantis and Fruit Fly) were measured to determine the eye parameter, which relates to the visual adaptations of the insect. The mantis' smaller eye parameter shows adaptation for more acute daytime vision at high light intensity allowing them to see the prey. The fly's larger eye parameter is adapted for lower light intensity according to its non-carnivorous lifestyle.

18 *Effects of Age and Gender on Illusions and Relationship Satisfaction*

Elizabeth Belt

Mentor: Joanne D. Altman, Psychology

In childhood, we are taught to believe in fairy tales and happy endings. The literature shows that romantic illusions fostered by fairy tales may aid relationships among young adults. The purpose of this study was to determine if these illusions are similar across age and if they effect relationship satisfaction. Participants completed the Romantic Beliefs Scale, the Love attitudes Scale, and the Relationship Assessment Scale. The results will address whether there is a difference in romantic beliefs between younger and older adults and if adults who do believe in the fantasy are happier in relationships than those who do not.

19 *Dense Breast Imaging*

Kimberly Bond

Mentor: Linda Croucher, Medical Imaging/Applied Health
Kelley McDonald, Medical Imaging/Applied Health

A simple screening mammogram may not be enough to detect a breast cancer. Some young women and some older women on hormone replacement therapy have dense breasts. Since dense breast tissue shows up on a mammogram as white and a breast cancer also shows up as white, the cancer may go undetected and untreated and ultimately take the patients life. Early detection is the key to survival. This is why other imaging tools are so important to the person with dense breasts. A couple of tools worth mentioning are Ultrasound and MRI (magnetic resonance imaging). Both of these modalities have proven to be very helpful tools in detecting breast cancers in patients with dense breast, and which was not detected by mammography.

20 *On Health Care: Making an Informed Decision*

Fred Hollingshead

Mentor: Al Riveland, Mathematics & Statistics

Every year, many people face an important financial decision concerning health insurance coverage for them and their families. Many employers offer a choice of insurance plans and often, people make this decision with little regard as to which of the various offered plans would indeed present the most financial benefit. This project investigates the plans offered by Washburn University to its faculty and staff, but can be easily be generalized to examine any choice of plans from any employees in making a more informed decision about their health care. Furthermore, it is a mathematical solution to a real-world problem: the comparison of various health insurance plans with regard to expected expenditures. This project begins by comparing the break-even points of Washburn's Base Plan and the Buy-Up Plan. Then the additional Flex Plan, a tax savings option, will be considered greatly complicating matters.

21 *Sociality in a Group of Captive Orangutans*

Jessica Snyder

Mentor: Joanne Altman, Psychology

The orangutan, generally, is very solitary. In the wild, orangutans usually spend most of their time alone with the exception that an offspring stays with its mother. In captivity, however, orangutans are often housed in small groups. This study investigated the sociality of a group of 5 orangutans (2 males and 3 females) at the Topeka Zoo. A non-intrusive instantaneous focal animal scan technique was used to observe the amount of activity and time engaged socially among the orangutans the animals were observed in both indoor and outdoor exhibits at randomized times throughout the day.

22 *Luminaries of Light*

Charlotte Hansen

Mentor: Reinhild Janzen, Art

My research paper delves into how Rembrandt, Vermeer, and Titian manipulated light and depicted women in their paintings. The light hides and reveals aspects that make women unique in each of the artists time periods. The artists revealed what they believed were righteous and sinful behaviors in women through symbolism that often involved the delicate balance between elements of light and dark. My paper explores what the artists were trying to reveal and hide with their use of shadows and highlights. Titian was a painter from the Italian Renaissance in Venice in the 16th century that created religious and mythological paintings which redefined the use of light and color in Venetian painting. Rembrandt and Vermeer were both revolutionary Dutch artists that painted during the 17th century. Rembrandt was influenced by Titian and the Italian painting style and use of light. Vermeer was influenced by Rembrandt's chiaroscuro and figure composition during his early career. Vermeer started out painting religious subjects, but then chose to focus on painting genre paintings of the daily life of women in Delft.

23 *Case Study in Cerebrovascular Sonography with Arteriographic Correlation*

Jorge Rodriguez

Mentor: Doug Jones, Allied Health

Kelley McDonald, Allied Health

This poster will detail the case presentation of a patient with signs and symptoms of cerebrovascular disease of the extracranial carotid arteries. Included will be an analysis of the sonographic data and the correlation of that sonographic data with a subsequent arteriographic examination.

25 *The Effect of Carbonated Beverages on Blood Lactate Levels and Muscle Fatigue*

Philip Newkirk

Mentor: Paul Wagner, Biology

For many years, scientists and athletes alike have pointed to lactic acid buildup in the muscles as the culprit behind muscle fatigue. Since carbon dioxide is easily converted to carbonic acid in the blood and tissues, it has been recommended to avoid carbonated drinks before and during athletic performances. The reasoning behind this is that additional carbon dioxide from the beverage will create an acid-base imbalance that prevents the lactic acid being produced in the working muscle from being shuttled into the bloodstream as quickly. However, recent studies have shown that this may be faulty logic. They suggest another mechanism may be at work in which lactic acid actually lets muscles work longer without fatigue by increasing the excitability of T-tubules in the muscle. We will carefully monitor the heart rate, respiratory exchange, and blood lactate levels of volunteers as they ride a stationary bike in two different sessions. In one session they will drink a carbonated sports beverage before riding, and in the other session, the same beverage will be consumed but

non-carbonated. The bottles will be coded double blind. The shift of the ventilatory break point and lactate threshold between the sessions will indicate how the carbonation is affecting lactic acid buildup and its effect on muscle fatigue.

26 *The Effects of Divided Attention on Time and Event-Based Prospective Memory*

Clinton Meyer

Mentor: Michael McGuire, Psychology

The literature on prospective memory has implemented distracting events to divert participants' attention from the task researched. This literature has in the past used either event-based or time-based tasks to discover how people's memory for intended actions works. Researchers have incorporated distractions to keep the participants from focusing on the prospective memory task. The methodology of prospective memory testing has implemented many different forms of testing participants. The results of these studies have neglected to combine both forms of prospective memory tasks together to discover the outcome. I will incorporate the two types of prospective memory tasks to compare the results.

27 *Progress Toward the Synthesis of an Expanded Oxophlorin*

Philip Suchi

Mentor: Sam Leung, Chemistry

Porphyrins and related compounds are photosensitizers potentially useful in photodynamic therapy (PDT). This project involves the synthesis of an expanded oxophlorin, a porphyrin derivative. The extended conjugation in this molecule may bring about absorption at a longer wavelength in the visible region suitable for PDT. The target molecule will be constructed by a "2 + 2" approach (the top half of the molecule combining with the bottom half). Currently we are able to synthesize the precursor (a 1,5-dipyrrolyl-1,4-pentadien-3-one) to the top half of the expanded oxophlorin.

28 *Alteration of UV-Visible Spectrum of Porphyrin Compounds by Extending Conjugated Electron System Utilizing Palladium-Catalyzed Heck Coupling*

Matthew Fullmer

Mentor: Sam Leung, Chemistry

The palladium-catalyzed Heck and cross coupling reactions have proven to be very useful reactions in organic synthesis. One known benefit to using this Heck type coupling mechanism is the continuation of conjugated electron systems between the two aryl compounds being coupled together. The extension of the conjugated electron system of a

compound is known to alter the UV-visible absorption spectrum of that particular compound. Altering UV-visible absorption of certain aryl compounds such as heme or porphyrin may have application for future photodynamic therapy (PDT) treatments of cancer. The results of this synthetic study were not yet successful in obtaining alteration of porphyrin UV-visible spectrum. However, trials were successful in altering UV-visible spectrum of a pyrrole analog through utilization of Heck coupling reaction.

29 *Body-Scaled Perception of Vertical Gaps Using Vision, Touch, and Audition: Which Body Part is the Important One?*

Shelly Hulinsky, April Tallerico

Mentor: Mike Russell, Psychology

According to James J. Gibson, an accurate understanding of perception requires consideration of both the observer and the environment. Gibson also argues that judgments of the world are scaled to the dimensions of the observer; i.e., perception is body-scaled. While a number of studies support this view, no known study has yet to examined the extent to which individuals are capable of judging whether a vertical gap permits passage. In the present study, observers were required to determine the height of a gap that allows for them to pass through without changing their body posture. To determine the extent to which perception is affected by the sensory system used, participants judged passage using either vision, touch, or audition. The findings of the study are considered in relation to Gibson's notion of informational and perceptual invariance. Consideration is also given to that portion of the observer believed to be the basis of perception.

30 *Strategy for the Molecular Cloning of a 6 Kilobase Pair Plasmid From Naegleria minor*

Casey McNeil

Mentor: John Mullican, Biology

Members of the free-living amoeboflagellate genus *Naegleria* are known to contain numerous circular ribosomal DNA (rDNA) plasmids in their nucleoli. Until recently no other plasmids were known to exist in *Naegleria*. However, *Naegleria minor* demonstrates what appears to be a second type of plasmid; whether it is nuclear or nucleolar remains unclear. Agarose gel electrophoresis of total nucleic acids isolated from *N. minor* indicates an plasmid migrating at a rate faster than that of the chromosomal DNA, but much smaller than the 14 - 25 kilobase pair rDNA plasmids. We introduce a strategy for the molecular cloning of this plasmid, employing methods that enrich for plasmid DNA. Following confirmation of the cloning, the plasmid will be subjected to DNA sequence analysis for comparison with genetic sequence databases worldwide. Our long-term goal is to understand the molecular biology of this plasmid so that we may genetically construct a gene expression system for *Naegleria*.

31 *Golden Lion Tamarin Use of Time in Captivity and Amount of Synchronous Behavior Displayed*

Angela Burrell

Mentor: Lee Boyd, Biology

Golden lion tamarin research has focused upon reintroduction efforts to the forest, and time budget data from the wild habitat has been examined to help further this aim. There has, however, been little research examining tamarin time usage in captivity. Thus, one of the main goals of this experiment was to investigate how the tamarins budget their time in captivity. It was hypothesized that the majority of their time would be spent moving and resting, as this would match up with data from experiments in the forest. Another aspect that was investigated, was the mating behavior of the two tamarins being observed. It has been determined that, to date, these tamarins have not had a successful birth. In conjunction, the synchronous behavior displayed by the animals was also investigated. Synchrony of behavior is thought to create greater social cohesiveness among herd animals. It was postulated that this behavior similarity in a mated pair may indicate they were attempting to create a stronger social bond, and possibly that they may be mating more frequently when they were not being observed.

32 *Singlet Oxygen by Photo Induced Benzophenone and Porphyrins*

Paul Bedore

Mentor: Stephen A. Angel, Chemistry

Photochemistry of porphyrins in the presence of oxygen is essential to their use as photodynamic therapy drugs. Porphyrin effectiveness in producing singlet oxygen can be explored using pump probe absorption spectroscopy. The experimental setup to study porphyrins using a subnanosecond nitrogen-dye laser was researched. Absorption kinetics evidenced that a benzophenone acetonitrile solution void of oxygen remained in the triplet electronic state out to 2.5 nanoseconds after initial excitation. These results were compared with those taken previously using a benzophenone solution in the presence of oxygen.

33 *Analysis of Investment Opportunities in the Automotive Sector*

Nicholas Avey

Mentor: Robert Hull, School of Business

This prospectus analyzes investment opportunities in the automotive sector, namely the Big Three (Ford, General Motors, and Daimler-Chrysler). The project discusses economic and sector impact on the companies and utilizes a financial operation known as The DuPont Strategic Profit Model, which analyzes change in a company and compares the most recent Return on Equity (ROE) to five years prior, establishing a company's suitability for investment over time.

using RAPD PCR

Scott Maley

Mentor: John Mullican, Biology

Mark S. Mills, Biology Department, Missouri Valley College, Marshall, Missouri

Jay C. Reed

Nerodia taxispilota, the brown water snake, is a large freshwater snake endemic to the swamps and rivers of the southeastern coastal plain. In an effort to better understand the natural ecology and mating behavior of this species, we collected blood and tissue samples from 276 wild and captive-born snakes for molecular analysis. Gravid females were captured in or near the Savannah River Ecology Laboratory in Aiken, South Carolina and taken to the laboratory to give birth. Blood or tissue (tail clippings) samples were collected from the mother and all living offspring. Total genomic DNA from these samples was extracted, purified and analyzed for quality and relative quantity by agarose gel electrophoresis. DNA samples were then subjected to random amplified polymorphic DNA (RAPD) PCR using short 10-base random oligonucleotide primers. To date we have developed several preliminary profiles and are continuing to characterize up to 40 different primers, either individually or in combination with others, to produce reliable DNA patterns that are easy to assign genotype. The profiles from the mothers and their offspring will permit the inference of a paternal genetic profile and determine if multiple paternity occurs in *N. taxispilota*. Furthermore, these profiles will be compared to the profiles of unrelated individuals to identify kin-specific markers unique to each clutch. This will permit the development of a quick and sensitive test that can easily and reliably assign genotypes of individuals in wild populations. In addition, the procedures developed in this study would not be limited to this species but could be applied to many other organisms as well.

35 Allergen Associated Proteins of Ambrosia Trifida

Laura Ross

Mentor: Janice S. Barton, Chemistry

Since ragweed is the leading cause of hay fever in the United States, The long term goal of this research is to discover if differential expression of proteins is found between ragweed species and related non-hay fever inducing species. Currently, this research is focusing of finding a facile extraction method, which yields the highest percentage of proteins and produces the least interference from other biological molecules on gels. Another goal is to find a highly reproducible staining method that provides high sensitivity and good resolution in visualizing the extracted proteins. The 2-D gels will be analyzed for over/under expression and differential expression of the proteins using GeneBio Melanie 4 software. The staining methods being used are Invitrogen Silver Quest, Invitrogen Simply Blue and SYPRO Ruby Red. Plant extraction methods include enhance volatilization extraction, TCA/acetone, chloroform/methanol and phenol extraction.

36 *Finding the Right Balance: Finding Centers of Mass using Maple*

Kyle Groundwater

Mentor: Kevin Charlwood, Mathematics & Statistics

In this project we look at finding the center of mass, “balance point,” for various two-dimensional objects. The centers of mass will be found by breaking down regions into simpler shapes, in some cases using the same area of the region twice in order to solve fewer equations. In other cases the region will be part of a whole where a piece can be added to the region then subtracted to find the center with fewer calculations. These cases involve curves which intersect to enclose simpler geometric shapes.

37 *Web Filtering in Java*

Neal Fultz

Mentor: Cecil Schmidt, Computer Information Sciences

As the Internet expanded in the 90s, the United States Congress passed several laws to regulate online pornography. The Children’s Internet Protection Act (CIPA) requires libraries receiving discounted Internet access or federal funding to install web filters to block obscene or pornographic images. The Supreme Court specifically upheld CIPA because of “the ease with which patrons may have the filtering software disabled.” (United States v American Library Association, 2003). Unfortunately, the majority of web filters available to libraries fail to meet the legal standards: many block entire pages instead of images, and none are easily disabled. With Java, we will study how to create a proxy server that retrieves an html document, determines if it contains offending images, and blocks those images, but can be disabled on the client’s side.

38 *Gender and Social Pressure on Cheating*

Mark Ireland

Mentor: Mike Russell, Psychology

Academic dishonesty is a growing problem in classrooms at the middle, school high school, and collegiate levels. The purpose of this study was to understand if students feel socially pressured to compete for grades. The participants were 70 men and women. Each participant was required to solve each of three puzzles in five minutes. Half of the participants were exposed to a graph with data showing that most other participants who had already completed the experiment were solving the puzzles accurately within five minutes. The other half of the participants was not exposed to the graph. Following the puzzles, participants completed a survey about their attitudes towards academically dishonest behavior. Results were discussed with reference to social pressure and gender. A better understanding of how students compare themselves to other students academically may be a useful tool to assist professors in reducing the amount of cheating that occurs in classrooms.

39 Initial Characterization of PCR Products from *Naegleria* Using Degenerate Telomerase Oligonucleotide Primers

Rodney Stueve

Mentor: John Mullican, Biology

The vast majority of eukaryotic cells examined to date possess the telomerase enzyme to regulate telomere replication, the process by which shortened telomeres are re-lengthened. This is an important process that prevents degeneration of chromosome ends during replication that, if un-repaired, ultimately shortens the lifespan on the cell. We hypothesize that telomerase is the enzyme used to maintain telomere length during *Naegleria* DNA replication. This report represents an initial characterization of DNA fragments amplified using oligonucleotide primers designed to recognize conserved motifs of the telomerase gene. PCR products were electrophoresed on agarose gels, purified and molecularly cloned. Several cloned PCR fragments are being subjected to DNA sequence analysis. The resulting DNA sequence will be analyzed to determine whether or not the sequences are derived from a known telomerase gene. The results will help elucidate whether *Naegleria* employs a telomerase-dependent or telomerase-independent mechanism for telomere maintenance.

40 Buying the Kansas House

Jessica Martell

Mentor: Steven Cann, Political Science -- Geography

Campaign funds do not necessarily spell victory. In this study of the 2002 Kansas House of Representatives election the data analyzed shows that campaign funds in fact come in last in a series of variables that affect the election of a candidate. Using cross tab analysis, Chi-squared significance tests, gamma, and Kendall's Tau-b, or Tau-c tests the research shows that a candidate's party affiliation and incumbency status determine the election results.

42 The Effect of Novelty on Eyewitness Credibility

Kira Johnson

Mentor: Joanne Altman, Psychology

Existing literature has shown that weapons in an eyewitness situation lower accuracy in recall, but increase the credibility of the eyewitness. The purpose of this study was to determine whether novelty produced a similar effect on eyewitness credibility. Participants were assigned, by gender, to 1 of 3 conditions: a novelty group, a weapon group, and a no object group. Each group was asked to read a brief eyewitness testimony of a crime describing either the presence of a novel object, a weapon, or no object. Participants were then asked to rate the credibility of the eyewitness' account. No significant differences were found among eyewitness accounts or between genders.

43 *The Freedom Schools Movement: Purpose & Significance*

Niashia Baker

Mentor: John Paul, Sociology -- Anthropology

In this paper I intend to examine the following question: What is the significance of the Freedom Schools Movement? The Freedom Schools Movement is a five to six week summer enrichment program that provides literacy to predominantly African American school aged children. I believe it is important because it provides the children with a sense of ethnicity, identity and pride. It also reminds them of the importance of their freedom and how it was achieved. Within this paper I will introduce and define the Freedom Schools Movement; relate to the history and development of the program; identify the programs' social significance; examine the programs' current existence; and lastly I will speak on the effectiveness of the Freedom Schools program and what it means to me. In addition I explore how black identity is nurtured, conceptualized and maintained through the Freedom Schools Movement.

44 *The Conversion Therapy Movement: Voices and Justifications*

Maiko Narizuka

Mentor: John Paul, Sociology -- Anthropology

This paper investigates the conversion therapy movement with specific reference to internal justifications of existence. Stated simply, I ask why-- from the voice of movement activists-- does the movement exist and what does it seek to accomplish. I note that this research is not directed to support or wholly negate the ideology of conversion therapy; the purpose is primarily to understand the movement from their perspective. To accomplish this, this work exists as a descriptive analysis of movement literature and Internet web-pages

45 *Human Interaction as a Form of Sociality in Captive Western Lowland Gorillas*

Cassandra Brenkman

Mentor: Joanne Altman, Psychology

Many of the behavioral differences between captive and wild gorillas are attributed to the social and physical restrictions of the captive environment. The purpose of this study was to demonstrate that human interaction could provide a source of enrichment, especially in the absence of a social group. A solitary gorilla and a pair of gorillas were observed in 10 minute time blocks using an Instantaneous Scan Sampling Technique. Data show the gorillas spent most of their time near viewing areas when people were present. These data suggest that zoo visitors provide a dynamic source of enrichment for the gorillas.

47 *Case Study in Statistical Process Control*

Daniel Lukowski

Mentor: Dave DePue, Office, Legal, & Technology

The customer determines quality by value and performance. In manufacturing, variations do

exist in processes and in product performance. Statistical process control enables us to interpret data, determining if a product or process consistently meets conformance. Identifying causes of variations enables us to make corrections, bringing the process back into control. Our manufacturing unit identified a bottleneck in performance testing on a new component line. Automatic test equipment (ATE) time was excessive due to retests and troubleshooting. The challenge was to determine if it was a failure in the component, the process, or the test equipment. My group team collected data for two months. I set up the case study by developing a variety of charts; including a Pareto, Histogram, and X Bar. These revealed that retests were attributed to faulty testing device relays. Further runs identified a software problem in the test equipment. Quality was improved and process time was significantly reduced. Additionally, this case study established a process that is currently being used in the plant to monitor ATE and ensure continuous quality improvement.

48 *Slavery In The Midwest: Experience and Perception among Law Enforcement Officers*

Vicky Luttrell

Mentor: John Paul, Sociology -- Anthropology

The purpose of this study is to explore the existence of contemporary forms of slavery in the State of Kansas. The focus will be Trafficking in Persons, which embodies other types of slavery such as domestic servitude, bonded slavery, forced labor, and sexual exploitation. This study seeks primarily to expose and inform the broader public to issues related to slavery in the 21st century. The potential benefits of this study include a broader awareness of this problem as a local issue, as local issues are global issues.

49 *Uncovered*

Alayna Ziegler

Mentor: Margy Stewart, English

This presentation will explore the sexual objectification of women in eastern and western societies. From bikini-clad models to fully-veiled women, the ways and reasons that women are transformed into no more than sexualized objects, as well as the ways in which this exploitation leads to violence against women, will be examined.

50 *Concealed Carry: Does it Reduce Crime Rates in the United States?*

Jacob Henry

Mentor: Steve Cann, Political Science -- Geography

This study was conducted to determine whether implementation of concealed carry policy decreases crime rates in the United States. The study found that, by conducting a time-series analysis, and examining various crime rates from the United States from 1960 to 2002, and looking at the births of "shall issue" states, there was statistical evidence to support the theory that concealed carry makes an impact on overall violent crime rates, and forcible rape rates, but not on all crime rates in the United States.

51 *Research of the Death Penalty*

Paula Kafka

Mentor: Steve Cann, Political Science -- Geography

In this study, research was conducted to prove whether the death penalty decreases murder rates or not. It is important to know this because it could save innocent lives. Past research was consulted and the research for this project was a basic replication of the past studies. The murder rates of states that do have the death penalty was compared to the murder rates of states that do not have the death penalty. It was found that the states with the death penalty have a higher murder rate than the states without the death penalty, which is consistent with past studies. Therefore, the death penalty does not decrease murder rates.

52 *Visualizing the Divine: Buddhist Art by Maya Gao and from the Dunhuang Caves*

Jennifer Soroko

Mentor: Reinhild Janzen, Art
Tom Prasch, History
Howard Faulkner, English

Maya Gao is a contemporary Chinese artist who fled her homeland and now lives in Las Vegas, Nevada. The subject of all her paintings is Dunhuang, a complex of Buddhist cave sanctuaries in the Gansu province in China, which have survived for hundreds of years. They were first built during the 4th century C.E., and continued to be expanded until the Yuan dynasty, around the late 13th century C.E. The painters of the caves at Dunhuang and Maya Gao both make art that represents the divine. Gao's art is strikingly similar to the paintings at Dunhuang, but their motives for creating art, however, are somewhat different. The cave murals were meant for worship, for a strictly religious purpose. Gao's art is about her heritage and culture. The purpose of my research is to understand Maya Gao's motives for recreating imagery from these ancient sites at Dunhuang.

53 *Mulvane Art Museum Outreach: Testing Cross-Curriculum Art Resource Guides for Elementary Classrooms*

Kandis Barker

Mentor: Reinhild Janzen, Art
Tom Prasch, History
Howard Faulkner, English

For my Master of Liberal Studies Capstone, I researched and developed two art-based cross-curriculum resource guides focused on the Mulvane Art Museum's collection of Kansas Quilts and Kentucky Folk Sculpture. These two guides serve as one way to share the Mulvane's collection with a wider audience. The visual art objectives of these two resources encourage the development of elementary students' enduring understanding of art and its visual language by looking at art and by creating art. The guides' objectives also engage student skills in mathematics, social studies, and communication. Lessons address Kansas Curriculum Standards in several content areas. My project for Apeiron presents my results

from testing these resources in a variety of elementary classrooms. In class settings, I examined the validity, practicality, and effectiveness of these guides to offer elementary teachers a museum resource for teaching art concepts and integrating art in other areas of learning.

54 *The Effects of Dog and Trainer Personality on Potential Service Dogs*

Krystle Dalke

Mentor: Joanne Altman, Psychology

This study investigated success in service dog training as a function of dog temperament and trainer personality. Participants were asked to complete several questionnaires about the personality and temperament of their dog(s), as well as the Big Five Human Personality Test. Participants trained their dog(s) in a certified behavioral training program. The dogs were rated on their response to training commands. The results will be discussed according to personality factors of dogs and trainers that best predict success as a service dog.

55 *Public Knowledge and Public Safety*

Travis Waterman, Jared Corwin

Mentor: Margy Stewart, English

In the post-911 era there has been a rise in interest in security and safety issues. Legislators have taken notice of this public concern and have taken action which at times has been controversial, such as the Patriot Act. During this discourse, we perceived an information gap between those who enact and enforce the law and the general public. We have decided to use public surveys, statistics, budget information, and need based analysis to focus on our own security at Washburn in order to raise awareness and begin a general discourse concerning the aforementioned issues.

56 *Secure Messaging*

Michael Allen, Justin Watts

Mentor: Jack Decker, Computer Information Sciences

Computer technology has changed the way information is shared between two different parties. Some information must be shared confidentially. To do this the message must be hidden or encrypted from prying eyes. We plan on showing some encryption styles used in the past and a custom computer chat program that encrypts a chat between two users.

57 *Alberto Garcia Millo and the Day of the Dead, One Artist's Perspective on a Folk Tradition*

Angela Detlor

Mentor: Reinhild Janzen, Art

The Mulvane Art Museum recently acquired 28 prints created by Alberto Garcia Millo, an obscure Mexican artist of unknown origin. The prints were all created during the late 1940s through the early 1950s in Meridia, Mexico. I will be focusing on the prints that imply

association with Mexico's Day of the Dead, El Dia de Los Muertos. I am comparing the work with folk traditions and identifying common cultural references.

58 *Gum Bichromate Printing on Aluminum*

Sara Meier

Mentor: Mary Dorsey Wanless, Art

The presentation will entail results of different experiments with printing photographs onto aluminum plates by using the gum bichromate process. There will be each part of the process displayed and explained, from the bare, untreated plate all the way to a finished piece.