**Kelsey Abele, Cadi Kadlecek**

Sponsor: Cadi Kadlecek, Forensics

*Three Crowns Room, Session B*

“Bridging the Gap Between Forensics and the Youth Community: Priming the Next Generation”

The benefits for adolescent involvement in co-curricular activities are immeasurable as youth spend almost half of their waking hours in discretionary activities outside of school (Larson & Verma, 1999). Being involved in activities provides a number of distinct learning environments with unique opportunities for growth and development (Fredricks & Eccles, 2010). The educational opportunities and attainment of community expansion and solidification into the future allowed for the creation of a camp designed to attract junior high students to academic endeavors. The “Jr. Writers Institute” is the attempt at creating this fostering environment. This program will be enacted the summer of 2013 for middle school students entering 6th-8th grade.

**Christopher Anderson, Marion Scheepers, Marlena Warner, Helen Wauck**

Sponsor: Max Hailperin, Mathematics and Computer Science

*Three Crowns Room, Session A*

“Ciliate Genome Remodeling”

Ciliates are single celled organisms hosting two types of nuclei, one an encrypted version of the other. In some species this encryption is nontrivial. During certain events in the ciliate life-cycle nuclei are updated through a process that involves decryption of the encrypted version. Mathematical models for the decryption process postulate certain specific molecular computations that achieve this decryption. In this work we seek to: (1) determine the molecular computational steps taking place during decryption by examining intermediate DNA products of the process; (2) determine the elements of the symmetric group that are invertible by the ciliate decryption apparatus; (3) determine the computational complexity of the several steps to be taken in modeling elements and operations of symmetric groups in the ciliate computing environment.

**Lauren Anderson**

Sponsor: Anna Versluis, Geography

*Three Crowns Room, Session B*

“Somali Immigrant Relations In A Rural Midwestern Town”

In the past few decades, rural towns in Minnesota have undergone significant demographic and economic changes. The introduction of food processing plants in rural communities around Minnesota created a demand for low-wage labor that immigrants from Africa, Latin America, and Asia have filled. The influx of these new immigrants has diversified communities that were once almost exclusively comprised of white European descendants. Much research on rural immigration has focused on Latin Americans, while the growing number of African immigrants into these communities has received less attention. Minnesota is home to the largest population of Somalis in the U.S. and it is this group of refugees that provides an interesting look at the relationship between rural residents and immigrants. Somalis stand in visible contrast to their white counterparts in terms of race, culture, and religion. The very visible differences between these two groups can cause conflicts as Somalis attempt to integrate into their new communities. This proposed research will analyze the relationship between Somalis and residents of St. Peter, Minnesota in an attempt to explain how and why they relate to and perceive one another.

**Anna Ayers Looby**

Sponsor: Mimi Gerstbauer, Peace Studies

*Three Crowns Room, Session A*

“The Warfare of Rape: Destruction of Peace at its Core”

On June 19, 2008, the Security Council of the United Nations voted to define rape as a weapon of war and a threat to international security. The vote was unanimous. Sexual violence, especially as it occurs during times of conflict, is an issue of public health for an entire population of people. A 2006 governmental survey in Liberia, a country that is recovering from a 13-year civil war, revealed that a devastating 92% of the 1,600 women interviewed had been the victim of sexual violence. Sexual violence is more than a single aggressive event toward a victim, but rather a strategic act that serves to undermine an entire region by robbing it of psychological security and peaceful stability. It is through this demoralizing act of humiliation that perpetrators are weakening one piece of fundamental piece of community maintenance and peace-building: the women.

**Brin Bailey, Dawn Comstock, Kyle Hilding, Maggie Lane, Michelle Myers, Michaela Rice**

Sponsor: Dave Newell, Center for Servant Leadership

*Three Crowns Room, Session B*

“Understanding Civility through Community-Based Research”

The Civility Project is a community based research project that was conducted by six Gustavus students from the Servant Leadership Program. The overall objective of this project was to provide a collective understanding of civility for the city of Saint Peter, MN and to inform city officials, community leaders and invested individuals of the current state of civility within the St. Peter community. Through this project we were able to identify common community values, where civility was present in the community, potential barriers to civility and possible avenues of improvement. The Gustavus students from the Servant Leadership Program partnered with twelve members of the St. Peter community that served as a task force to help guide the research and reach out to various members of the community. In order to collect data, groups within the community were identified that comprised a diverse representative sample. Data was collected through one-on-one interviews, focus groups and surveys. Preliminary research revealed that the St. Peter community values Faith, Family and Education. Community members appreciate St. Peter because of the small town feel, safe atmosphere, opportunities for involvement and community gathering spaces. The study also showed potential barriers to civility such as stereotypes, discrimination, and the non-confrontational Midwestern approach to conflicting opinions. Possible recommendations to improve civility in St. Peter include community conversations, public festivals and increased curriculum flexibility in schools. We plan on presenting these finding in both paper and presentation form to the original twelve member task force and St. Peter community members.

**Katie Barta**

Sponsor: Jim Dontje, Environmental Studies

*Three Crowns Room, Session B*

“Gustavus Garage Sale”

 Each year, college campuses produce hundreds of tons of waste that could be recycled and reused. Following the lead of numerous colleges throughout the nation, Gustavus Adolphus College will reduce this waste by hosting an annual donation drive and garage sale for the Gustavus and the Saint Peter Community. This event will accomplish four goals for the Gustavus campus: 1) reduce the amount of waste sent to Mankato to be burned, 2) provide the students an easy way to lighten their end-of-year packing and disposing load, 3) offer the community inexpensive, lightly used goods and support local charitable organizations, 4) build a stronger community bond between the Gustavus campus and the surrounding Saint Peter Community.
 There will be two components to this project. An end of the year donation drive and an early summer garage sale. The garage sale will reduce waste, raise awareness about wastefulness and generate funds for charitable organizations such as the Salvation Army, Minnesota Valley Action Council, Habitat for Humanity and the Saint Peter Children's Weekend Food Program.
 The donation drive will begin in May and the garage sale event will be held in the Lund Arena on June 15th from 8am until 4pm. Donations and monetary profit will be distributed to local charitable organizations listed above.
 We are sponsored by Student Senate, the Coca-Cola Grant, the Environmental Studies Department, and the Gustavus Greens.

**Katie Barta, Sam Good**

Sponsor: Jim Dontje, Environmental Studies

*Three Crowns Room, Session A*

“Sustainability at Gustavus: Biking Initiatives”

As Gustavus Adolphus College strives to increase sustainability on
campus, initiatives need to be made regarding biking as an
alternative mode of transportation that could reduce our carbon footprint. Creating a "Bike Friendly Campus" will promote campus sustainability through the reduction of carbon emissions and also
increase the health and wellness of students on campus by encouraging
biking as a form of exercise and offering stress relief.

With a relatively large biking population at Gustavus, we believe the
installation of new and improved bike racks would please current
bikers and encourage additional students to use bikes on campus, as
there will be more spaces and racks will be much less cluttered.

By focusing on increased accessibility, quality of equipment and
encouragement Gustavus can continue to attain improved certification.
Through examination of biking initiatives at Luther and St. Olaf and
current student sentiments surrounding biking in the community, we
have targeted three areas of need: 1) winter bike storage 2) new bike
racks and 3) a campus repair station. This initiative will increase
Gustavus’ sustainability through alternative transportation.

Funding has been received from the Coca-Cola Grant and we have
purchased a repair station from Dero and are working with physical
plant to purchase many new, high quality bike racks to place
throughout campus.

The League of American Bicyclists has a “Bike Friendly Campus”
certification program to help promote campuses with biking
initiatives. Due to our recent biking initiative work we have been
awarded a bronze designation.

**Emily Batchelder**

Sponsor: Lynnea Myers, Nursing

*Three Crowns Room, Session B*

“Effect of Summer Institute on High School Students’ Perceptions of Pursuing a Nursing Career”

The purpose of this research study was to evaluate the effect of high school students’ experiences at the Summer Institute of Nursing (hereafter referred to as Institute) on student awareness and likelihood of pursuing careers in the nursing profession using a post-experience survey. Career exploration experiences in nursing have been shown in research to be valuable opportunities to expose high school students to the profession of nursing. Research studies indicate these experiences have increased student awareness of opportunities within the nursing profession and likelihood of students pursuing a career in nursing. The Institute was a five-day residential experience at a rural college campus in the Midwest for students entering their 11th and 12th grade years in high school to explore careers in nursing.
In this exploratory, quantitative study, students rated their satisfaction with the Institute overall, as well as the value of individual experiences held during the Institute on the post-experience survey using a 5-point Likert scale. Post-experience surveys also included questions rating student feelings toward the nursing profession and their likelihood of pursuing a career in the nursing profession before and after the Institute using the same 5-point Likert scale.
Twenty out of twenty students participated in the research survey (n=20). All students were female. Overall, students rated their enjoyment of the Institute at a mean of 4.90 on the 5-point Likert scale. All 20 students (100%) rated their views on the variety of career opportunities in the profession of nursing and simulation experiences offered during the Institute at the highest level on the Likert scale (5). The mean of students’ evaluations on likeliness of pursuing a career in nursing before Institute was 4.15, while the mean of students’ evaluations on likeliness of pursuing a career in nursing after the Institute was 4.90. The p-value calculated between these two means and their respective standard deviations (using a two-tailed t-value calculation) was p=.0009, making the difference statistically significant.
Research studies have shown an increase in high school students’ awareness of, and likelihood of pursuing a career in nursing as a profession as a result of career exploration opportunities. The findings of this study supports opportunities such as the Summer Institute of Nursing to increase students’ likelihood of pursuing a career in nursing, as well as increased awareness of the variety of career opportunities within nursing. Offering a variety of career exploration opportunities proved to be a positive experience for high school student participants overall, and the Institute as a whole was rated as a highly enjoyable experience.

**Elsa Bell**

Sponsor: Anna Versluis, Geography

*Three Crowns Room, Session A*

“Benefits Of Urban Gardening”

What are the benefits of urban gardening for individuals and communities? The research proposed for this project will investigate how having some form of urban garden or agriculture in a person’s daily living affects their lives and surroundings. The data for this proposed research project will mainly be surveys and interview based. Through the use of surveys this project proposes to learn about the personal benefits of urban gardening/agriculture, at an individual and community level. The expected results for this proposed project are that the presence of urban gardening/agriculture is beneficial; this proposed project will aim to show reasons why individuals should participate in gardening either at an individual level or a community level.

**Eli Benz, Kat Dahl**

Sponsor: Mike Ferragamo, Biology

*Three Crowns Room, Session B*

“The Effect of Scopolamine Bromide on Spatial Learning By Rats”

Behavioral experiments give exceptional insight on psychological processes and the neural mechanisms of spatial learning and memory. The intent of this study was to test the effect of scopolamine on spatial learning and memory of rats by using the Morris Water Maze (MWM). The MWM is a tool commonly used in behavioral experiments that requires the rat to learn quickly while attempting to locate a hidden platform in a pool of water. The induction of hippocampal long-term potentiation, a physiological correlate of learning, can be induced by activation of the cholinergic input from the medial septum. Pre-training administration of the drug scopolamine, a muscarinic cholinergic antagonist, induced strong amnesia in rats. The control rats and the rats injected with scopolamine both exhibited learning, but the control group learned more quickly than the rats injected with scopolamine. When the rats were required to recall previously learned information, the control rats did so much more effectively. The results suggest that cholinergic inputs to the hippocampus are involved in spatial learning.

**Zachary Harrison Blinkinsop, Krystal Bundy, Ian Decker, Reanna Phillips, Kenwon Tran, Amanda Wood**

Sponsor: Seán Easton, Classics

*Three Crowns Room, Session A*

“The Rhythm of Love: A Metrical Performance of Catullan and Horatian Poetry”

This project intends to showcase common poetic meters employed during the late Republican era of Roman literature through a student-made film. The students of the LAT-302 Horace and Roman Poets course will perform a total of eight Catullan and Horatian poems on film, weaving a loose narrative about the lifecycle of a romantic relationship. Each of the poems will be performed in Latin according to their respective meters, with English subtitles. The video will be accompanied by a short informational paper describing the various poetic meters, their histories, and their effects on literature. The goal of the project is to demonstrate the aesthetic qualities of Roman poetry, to simulate how a poetic reading would sound to a Roman of the late Republican era, and to show that many of the themes and messages of ancient Roman literature are universal and relatable today.

**Laurel Boman**

Sponsor: Eric Dugdale, Classics

*Three Crowns Room, Session B*

“The Ethnic Medea on the American Stage: Colonization and Decolonization Through the Classics”

In this paper, I seek to explore the intersection between Greek tragedy and decolonization through an analysis of American productions of Euripides’ Medea. This play is particularly well suited to explore themes of decolonization, power, privilege, and marginalization, as Medea is herself a foreigner and her identity is inextricably linked to her status as such. The play is rife with the rhetoric of Greek cultural superiority (as Jason says to Medea: “In the first place you have a home in Hellas/instead of some barbarian land,” Roche 356). When set on the American stage, this rhetoric lends itself useful to a consideration of America’s own colonial past and current cultural identity. There have been over a hundred productions of Medea in the United States since 1798. I seek to focus on the productions that present Medea as an ethnic other in order to analyze threads of cultural colonization (has the play been used to underpin American ideas of cultural superiority?) and decolonization (has the play been used to subvert the dominant American culture?) on the American stage.

**Kendra M. Braegelmann**

Sponsor: Jan Wotton and Mike Ferragamo, Neuroscience

*Three Crowns Room, Session A*

“Relationship Between Salicylate Induced Tinnitus And Circadian Rhythm”

Tinnitus is characterized by hearing an uncontrollable, phantom noise and affects the quality of life of approximately 30 million people in the United States. This condition is most commonly found in individuals over 60 who have been exposed to loud noises throughout their lifetime. The goal of this experiment was to create a model system of tinnitus in rats to enable investigation of the relationship between tinnitus and circadian rhythm, as reports indicate human symptoms worsen at night. Tinnitus was induced in rats by an injection of salicylate. The presence of tinnitus was detected through the gap startle paradigm. A startle, characterized as eyelid closure and flexing of facial and skeletal muscles, is an instinctual response upon hearing a sudden sound. The startle response is attenuated if the animal hears a prior signal in the background noise, such as a gap of silence. However, if the subject is experiencing tinnitus it will not be able to easily detect the short gap in background noise and therefore, there should not be a reduction in startle response. Through the use of this framework, we detected an increased gap startle response in a salicylate-injected rat compared to the same rat’s response without salicylate injection. Successful replication of this methodology will provide the groundwork to investigate whether a connection between tinnitus and circadian rhythm exists, which may further elucidate the neural tinnitus pathway.

**Elizabeth Brauer, Steffanie Larson**

Sponsor: Ana Adams, Modern Languages, Literatures, and Cultures

*Three Crowns Room, Session A*

“Engaging Minority Entrepreneurship: A Partnership in Support of the Entrepreneur Doorway Project”

In partnership with La Mano’s Entrepreneurial Doorway Project (EDP), the Greater Mankato Diversity Council and the Small Business Development Center (SBDC), students in Spa 390- Spanish film class are working to increase awareness about the growing potential and opportunity behind minority entrepreneurship and the innovation by the EDP/SBDC to find solutions to the pervasive roadblocks minority entrepreneurs still face today. The Spa 390 class has produced a series of videos that, together, introduce the story of minority entrepreneurship in South Central Minnesota with the goal of providing information about services and resources but also engaging the community in discussion about the business opportunities for minority entrepreneurs. Students will share informations about the project and the partnership, as well as showcase their video work and preliminary findings.

**Amy M. Brooks**

Sponsor: Heidi Meyer, Nursing

*Three Crowns Room, Session A*

“Exploring First Year College Students’ Perception and Knowledge of Digital Abuse”

In today’s society, adolescents and young adults are heavily exposed to and influenced by the digital world of social media (cell phones, Facebook®, Twitter®). If used in inappropriate ways, this use of digital technology presents new environmental factors that can challenge the health and well being of young people. There is very limited research on digital abuse and its impact on young adults. The purpose of this study is to explore first year college students’ perception and knowledge of digital abuse.

This exploratory research study includes participants who are first year college-aged male and female students. The participants have been recruited from a rural 4-year baccalaureate college in the Midwest United States. This study is a 14-question paper survey that uses several different types of questions including: demographic questions, closed-ended questions, contingency questions, open-ended questions, and Likert scales to gather both quantitative and qualitative data. IRB approval was obtained and data collection runs from November 2012 through December 2012. Both descriptive statistics and content analysis will be used to evaluate the data collected from the surveys. Preliminary data indicate that about 70% (N=43) have either personally experienced digital abuse or know a friend, peer, or family member that has experienced digital abuse. Findings from the 10-point Likert scales on the severity of digital abuse and openness to education are beginning to indicate that the majority of participants perceive digital abuse as a moderate to severe problem (average rating 7.0) and they are open to education on the topic (average rating 7.7). Preliminary analysis of narrative data indicates several themes: digital abuse is a more common and more severe problem then people realize, minimal amounts of education have been received, and more education on digital abuse is needed starting at an early age. Upon conclusion of data collection and analysis, the results of this study may be used for further research as well as in the development of educational programs on digital abuse for adolescents and young adults.

**Tram Bui**

Sponsor: Peg O'Connor, Philosophy

*Three Crowns Room, Session B*

“The Philosophy of Sexual Addiction and Recovery”

 In the course of studying the philosophy of addictions, one of the most heavily debated topics is the legitimacy of sexual addiction as a recognized behavioral disorder. Unlike chemical disorders, the discussion of this behavioral disorder will touch upon sex, intimacy, and relationship imbalances at its extremes of hypersexuality, and conversely, sexual anorexia. Much of the project will reference Patrick Carnes, a renowned scholar on the recognition of sexual addiction and health, who proposes multiple theories and concepts on the discussion of sexual addiction and recovery.
 Part of the project will also look at the culture and engenderment of sexual addiction. A question of defining sexual addiction as a recognized disorder stems from the taboos and stigma of discussing sex in the public realm of culture and society. The engenderment of sexual addiction in male and female addict behavior, and the attribution of either sexual deviancy or inappropriate relationship and intimacy behaviors, respectively, proposes questions as well. Through personal testimonials and case studies, as well as an in-depth look into recent cinematic portrayals of sexual addicts, I will discuss the legitimacy of recognizing and defining the philosophy of sexual addiction.

**Daniel Burnett**

Sponsor: Kara Barnette, Philosophy

*Three Crowns Room, Session B*

“Foundations of Harm, Foundations of Knowledge”

The power of agribusinesses relies heavily on assumptions about a single scientific truth. Agribusinesses shape the debate itself on food production through the power of the language of scientific discourse. Those who are at the most risk of the harms of agribusiness share an epistemic privilege about the land and the food sources that those in the first world have often looked to. Up until this point many have rejected large scale agribusiness by romanticizing ideals of indigenous communities in the third world, by forcing them into first world theoretical frameworks. However, this approach by itself does not give those in the first world a framework for understanding moral agency in the US. Failing to do this leaves the harmful epistemic frameworks in place. In order to productively further both environmental and social justice issues we need to look towards the knowledge of those outside centers of power. To overcome these harms we need to shift our paradigm by reevaluating what counts as knowledge and knower about the environment itself. Rather than continuing the current models of individual moral agency and moral protest we need a philosophical project that forces to look within our own communities to develop new solutions to environmental issues. My project draws on both classic and contemporary American philosophy, including the work of Henry David Thoreau, William James, Deane Curtin, Lisa Heldke, and Sandra Harding.

**Matt Bye**

Sponsor: Mark Bjelland, Geography

*Three Crowns Room, Session A*

“Parishes without Borders: Congregational Geography in Minneapolis & St. Paul”

Christian churches are called to serve their communities and the world, but what exactly is their area of ministry? Catholic and some Lutheran churches use parishes to demarcate their areas of ministry, but what about other protestant denominations? This research focuses on the perceived and practical area of ministry for evangelical churches in the Twin Cities metro area. In a case study of three protestant evangelical churches, I examine the perception of area of ministry and compare it to the spatial distribution of church attendees.
 The three churches studied in this research provide a sound cross-section of Twin Cities metro; I focus on a city church in urban Minneapolis, a transitory suburb church in the inner-ring suburb of New Hope, and a developing suburb church in the city of Woodbury. These three churches offer unique data on a wide range of social demographics in the Twin Cities. Churches have a great impact on the social landscape; understanding the different areas of the metro aide in understanding the churches’ ministries.
Using the sectoral model of city development and neighborhood turnover as a basis I examine the spatial aspects of these three congregations. Primary interview and observational data was collected and is analyzed in comparison with the density and distribution of addresses of attendees. Centrality and distance decay play a major role in understanding the churches’ areas of ministry. Through this analysis better understanding of religion’s impact on the social landscape and the geography of congregational life can be held.

**Kristen Campbell**

Sponsor: Carolyn Dobler, Mathematics and Computer Science

*Three Crowns Room, Session B*

“Tobacco Use by Women During Pregnancy”

For my Honors thesis in Mathematics, I performed a statistical analysis on a National Health and Nutrition Survey. I analyzed the relationship between mothers who use tobacco during pregnancy and various issues that can arise during labor. The first part of my project was looking at what characteristics of the mother are linked to smoking tobacco during pregnancy. Mothers who used tobacco during pregnancy were statistically more likely to have had a previous abortion, live in a rural area, and have with a lower family income. Next, I looked at the effects of using tobacco on the actual delivery of the baby. In this case, the mother is more likely to present with anemia, hyaline membrane disease, and cardiac disease at labor. A mother who used tobacco during pregnancy is also more likely to have a premature rupture of their membrane, have a precipitous labor, and give birth to a breech baby. Labor is a very critical time for the health of a newborn baby, and smoking tobacco has adverse affects to this process.

**Mia M.S. Cannon**

Sponsor: Mimi Gerstbauer, Peace Studies

*Three Crowns Room, Session A*

“Rehabilitating Child Soldiers”

There is a growing awareness of children being used as soldiers. It brings up questions of international law, but also how to help a child who has been victimized. This paper will be discussing the various methods used to rehabilitate child soldiers and the processes that these methods use, and which one may be the most effective. It will do this by viewing different approaches and analyzing if these techniques have any draw backs or if they do not fully address all the needs of the children.

**Nora Christensen, Michael Howe**

Sponsor: Thomas Gardner, Chemistry

*Three Crowns Room, Session B*

“Synthesis of the Bifacial Ligand, 1,6,7,12-Tetraazaperylene: A New Approach”

1,6,7,12-Tetraaazaperylene is a conceptually useful ligand for constructing coordination polymers with potentially interesting electronic and magnetic properties. However, the synthesis of this compound has been elusive to synthesize, and has only been reported recently through an inconvenient starting material that is not easily customizable. Our initial approach was to mimic the reported synthesis of the similar compound, sampangine, which is itself prepared in two steps beginning with a hetero Diels-Alder reaction of crotonaldehyde dimethylhydrazone and a bromoquinone to yield the intermediate compound cleistopholine. Unfortunately, our attempts to reproduce the reported synthesis of the analogous intermediate, 4,8-dimethyl-1,5-diazaanthraquinone, yielded a complex mixture of products, with only a trace suggested to be to desired intermediate. We have therefore undertaken a new, four-step synthetic approach to this compound, one designed to include on the heterocycle ring the peripheral leaving groups necessary for construction of the desired polymers.

**Matthew Collins, Ryan Williams, Olivia Johnson**

Sponsor: Bruce Van Duser, Health & Exercise Science

*Three Crowns Room, Session B*

“Comparison of Plyometric Training and Traditional Run Training on Two-Mile Run Performance”

Running two miles is a good indicator of aerobic fitness levels and there are many different training methods used to decrease running time. Berrymann, Baosquet, and Maurel (2010) reported plyometric training was more effective than dynamic weight training on improving the energy cost of running. The purpose of this study was to compare the effect of plyometric training, traditional running and a combination of plyometric training with traditional running on two mile run performance. Fifteen male Division III college students volunteered for this study. A parallel group design compared differences in the dependent variable of two-mile run performance between plyometric only (PO), traditional aerobic (TA) and combined plyometric and traditional (PT) training groups. Pre and post-tests were used to measure two-mile performance over a six-week training period. The two-mile run was performed on an indoor track. Each group completed a ten-minute warm up on an exercise bike for every exercise session and completed the specified workout. The PO group completed three sets of twelve repetitions box jumps, three sets of twelve repetitions squat jumps and three sets of twelve repetitions broad jumps. The TA group completed 20 minutes of running on a treadmill at 75 percent or more of maximum heart rate. The PT completed the same 20-minute run followed by the plyometric routine. An analysis of variance test (ANOVA) indicate that there was no significant difference (p> 0.05) in two-mile run time between the training groups (PO - pre 15.8 ±.75 post 15.68 ±.97; TA – pre 16 ± 1.73 post 15.3 ± 1.57; PT – pre 14.24 ± 1.56 post 14.24 ± 1.58). Based on the results of this study, individuals may perform either traditional running or plyometric training to improve medium distance run performance. Future research should include larger group size and longer training periods. IRB# 1112-0128

**Cory Colvard, Cory Anderson**

Sponsor: Stephanie Otto, Health & Exercise Science

*Three Crowns Room, Session A*

“The Effects of Creatine Monohydrate on 2-Mile Run Time”

Creatine monohydrate has been known to increase the capacity of anaerobic activities. Kerksick, et al. (2007) found that creatine monohydrate supplementation elicited greater improvements in strength and muscle hypertrophy while resistance training, compared to resistance training without creatine use. Much less evidence exists for the effect of creatine on aerobics activities. Therefore, the purpose of this study was to determine if creatine monohydrate had an effect on two-mile run time. Twelve college age males were recruited to participate in this project. Participants self-reported participating in a moderate level of activity prior to the start of the study. The independent variables were the control group and the creatine monohydrate group. The dependent variable was a two-mile run time. The participants were randomly assigned to a control group or creatine monohydrate group. The creatine monohydrate group was instructed to consume one teaspoon of creatine monohydrate 30 minutes before running and again immediately following. Both groups completed a two-mile run three days a week for four weeks during the study. Participants were timed at the start of the training period, again once every week, and again after the four-week training period. A paired sample t-test (p < .05) will be conducted to determine whether participants improved their 2-mile run time over the study period. An independent sample t-test (p < .05) will then be conducted to determine any significant changes between groups. Predicted results may indicate that both groups will see significant improvements in their 2-mile run time but that no significant differences will be seen between the creatine and control group. Literature supports the effectiveness of creatine monohydrate on improving anaerobic power systems (Kerksick, et al. 2007) and we hypothesize that this effect will not translate into significant improvements in 2-mile run time among college age males. Future research may look at activities that combine anaerobic and aerobic work to see if creatine might improve performance. Data collection is currently in progress.

**Austin Conrad**

Sponsor: Doug Huff, Philosophy

*Three Crowns Room, Session B*

“"The Hobbit" and "The Dark Knight Rises:" Aristotle In Modern Literature”

One of the oldest ways which humanity has used for analyzing literature has been through Aristotle's understanding of tragedy. Using a critique of modern-era literature and film such as "The Hobbit" and "The Dark Knight Rises," I intend to explore how the ancient concept of the destruction of the internal moral character and the classical tragedy remain vitally important to our lives and understanding of literature today.

**Grant Cooper**

Sponsor: Laura Triplett, Geology

*Three Crowns Room, Session B*

“Mapping Tree Growth and Survivorship in Monteverde, Costa Rica”

Since 2002, the Fundacion Conservacionista Costarricense (FCC) has been working to create a biological corridor on the Pacific slope of Costa Rica to restore habitat for the Three-wattled Bellbird . This effort is being done through reforestation of pasture and farm fields from Monteverde all the way down to the Gulf of Nicoya. The challenge is that there are many unique life zones within the corridor, each with a unique assemblage of different trees species. Also, other factors might affect the success of reforestation within these life zones such as maintenance regime and slope. One area where reforestation success with native tree species is currently being studied is an FCC site in Monteverde called Nacimiento y Vida. At this site, the growth and survivorship of four tree species was studied in two plots with different slopes, one relatively flat with a 10 degree slope and the other more steep with a 34 degree slope. Observations in the field were conducted in order to determine the location of trees on a map and take basic measurements of their overall health. The four species studied were; Casimiroa edulis, Myrsine coriacea, Nectandra salicina, and Roupala glaberrima. Using the GIS software ArcMap the individual trees were plotted and information about them joined to those points. The final products were maps of the two plots showing where the trees are located, which trees survived, and the monthly growth rate for each tree. In the future, these maps can be used to make other reforestation projects more successful because of the new information learned about each of the species studied.

 Costa Rica Conservation Foundation, http://66.147.244.232/~fccmonte/

**Susan Crane**

Sponsor: Eric Dugdale, Classics

*Three Crowns Room, Session B*

“Divine Suffering and the Human Experience”

This paper explores the intersection of the divine and suffering in the human experience through the transgressions and punishment of Prometheus. The human experience is differentiated from the divine experience by suffering, a condition understood only by certain gods, most notably by Prometheus. Prometheus was a Titan who, in granting humans the gift of fire, incurred the wrath of Zeus and suffered a cruel punishment. This paper examines Aeschylus’ intense account of Prometheus’ suffering in his Prometheus Bound, as well as Hesiod’s portrayal of Prometheus in his Theogony. Modern representations of Prometheus are also explored, specifically his romanticized and distinctly human depiction as a rebel struggling against a tyrant. In ancient and modern representations, Prometheus’ pity of humanity and subsequent transgression leads to his participation in the human condition through his punishment. This paper explores why suffering is a determinant of mortality through an examination of Prometheus’ unique position as a god forced into the human experience. Mortality is experiential; gods with human qualities cannot participate in the human experience unless they suffer on behalf of humans. Strangely, Prometheus intentionally joins humans in their existence, although his gift of foresight grants him prior knowledge of future suffering. Why would Prometheus transgress if he knows his inevitable punishment? I argue that Prometheus willingly descends into the human experience in order to demonstrate the interdependence of gods and humans, an action that is in full accordance with his ultimate goal: to prove the futility of placing strict boundaries on identity.

**Amanda Croonquist**

Sponsor: Mimi Gerstbauer, Peace Studies

*Faculty/Staff Lounge, Session B*

“Alternative Methods of Incarceration ”

An overwhelmingly large portion of the United States’ population is incarcerated. In fact, the United States has the highest number of incarcerated individuals in the entire world. Why are so many individuals held within correctional facilities, and what can be done to decrease the prison populations within the United States? Restorative justice, among other alternative methods, is an approach that aims to decrease the overwhelming amount of individuals who are incarcerated and promotes rehabilitation rather than retribution. This paper will identify alternative methods used to address disputes and will discuss the impact of nonviolent alternative approaches as opposed to incarceration. Alternative methods of dispute resolutions such as restorative justice, mediation, and rehabilitation are found to be extremely beneficial approaches as opposed to the penal system, which predominantly focuses on retribution.

**Teige Cudahy**

Sponsor: Anna Versluis, Geography

*Faculty/Staff Lounge, Session B*

“Are We Happy Here? A Proposed Study of Sense of Place and Subjective Wellbeing”

Happiness may be the most basic, most sought-after, yet hardest-to-find feeling. How does place contribute to our happiness? “Place” is not merely location: it also involves experience. The way in which people perceive this combination of location and experience is called sense of place. The proposed research will ask how the relationship between sense of place and subjective wellbeing of Gustavus students has changed over time. The proposed methods will include a sample of current students and alumni, using surveys and interviews to complete the research.

**Kat Dahl, Erin Sherman, Heather Annis, Jim Hill, Jacob Forcier, Heather Goff, Britta Rinke, Matt Keller, Torey Asao, Blair Riegel, Laurel Krebsbach, Liz Strom, Nikki Carlson, Shelby Winzent, Quinn Arnold: Student Athlete Volunteer Educators**

Sponsor: Kari Eckheart, Athletics

*Faculty/Staff Lounge, Session A*

“Student Athlete Volunteer Educators Promote Healthy Choices by Hosting Mission Nutrition Events in March”

College is a stressful time in which students are faced with the newfound freedom to choose when and what they want to eat. On top of classes and other extracurricular activities, 80% of Gustavus students are involved in athletics, both intramural and varsity sports. An important aspect to athletic success is choosing the right foods to fuel the body. During the month of March, National Nutrition Month, SAVE set out with the goal to aid Gusties in making healthy and easy choices to fit their busy lives. Two separate events were held to inform the student body about healthy nutrition. George Elliot (registered dietitian in Dining and Health Services) was present to oversee both events and consult with students. First, a yogurt parfait bar with fruit and granola toppings was offered in Lund Athletic Center to promote healthy diet alternatives. Handouts were distributed to inform students about eating healthy, primarily focusing on how to plan meals in both the cafeteria and their own kitchens. Also in March, SAVE members handed out baggies of pre- and post-workout snacks to students entering and exiting Lund. The bags consisted of Clif bars, Luna bars, granola bars, string cheese, bananas, PowerAde, chocolate milk, and pamphlets listing examples of healthy snacks that maximize athletic performance before and after workouts. To measure the outcome and impact of these events, a survey was sent to all participants via email to determine whether or not the students implemented the advice they were given. Funded by Coca-Cola Education Partnership.

**John Danforth, Dwight Stoll, David Harmes, James Arps (ProMed)**

Sponsor: Dwight Stoll, Chemistry

*Faculty/Staff Lounge, Session B*

“Release Rates Of The Steroid Dexamethasone Phosphate (DSP) From Silicon Rods Used In Implantable Medical Devices”

The purpose of this research was to determine release rates of the steroid dexamethasone phosphate (DSP) from silicon rods used in implantable medical devices such as pacemakers. The elution of DSP from the silicone rods into phosphate buffer solution at 37°C was monitored over a four-week period using high performance liquid chromatography (HPLC). Three different preparations of the silicone rods were studied to understand the factors affecting the rate of release of the DSP to the buffer solution: 1) low temperature cure with no polymer sheath; 2) low temperature cure with polymer sheath; and 3) high temperature cure with no polymer sheath. All silicon rods contained 25% DSP by mass. A set of standards with known quantities of DSP were analyzed by HPLC to prepare a calibration curve for quantitation. Samples of the phosphate buffer were collected at 1, 3, 6, and 12 hours, 1, 3, and 7 days, and 2, 3, and 4 weeks, and analyzed by HPLC. From these data, the cumulative release of DSP was plotted as a function of time, and the elution rate constants for the three experimental conditions were determined. From these data, the cumulative release of DSP was plotted as a function of time, and the elution rate constants for the three experimental conditions were determined. It was found that the rods cured at lower temperature released DSP at slower rates compared to those cured at higher temperature, and that the polymer sheath had the largest impact of slowing elution of the drug from the rods. These results will inform subsequent design and manufacturing of these rods for application in implantable devices.

**Nathan Dexter**

Sponsor: Anna Versluis, Geography

*Faculty/Staff Lounge, Session A*

“Language in Flux: Sami and Meänkieli Languages in Northern Sweden”

Northern Sweden's Sami and Meänkieli languages, like many minority and indigenous languages, are threatened by extinction. A long history of suppression of Sami and Meänkieli and encouragement of the use of Swedish have resulted in damaged languages, but recent policy changes and shifts in cultural attitudes have resulted in a more favorable climate for these northern minorities. This proposed research project will seek to understand how political minority language preservation efforts have changed the current status and future outlook of Sami and Meänkieli with regards to the impact on individuals and communities, especially the young and the elderly, in the cultural landscape of Northern Sweden.

**LaTreasure Dickson**

Sponsor: Bruce Van Duser, Health & Exercise Science

*Faculty/Staff Lounge, Session B*

“Relationship of low back pain and number of years in participation in gymnastics
”

Due to the extensive bodywork and strenuous activity, gymnasts are prone to injury of their body, especially their lower back. Hall (1986) reported that gymnasts as a group displayed higher than average incidents of stress related pathologies of the lumbar spine. The purpose of this study is to examine the relationship among low-back pain and the number of years in competitive collegiate gymnasts. A correlational research design is examining the relationships of the dependent variables of low-back pain and the number of years in gymnastics. Eighteen members of a Division III gymnastic team are participating in this study. A survey determines the prevalence of low-back injuries and the number of years of participation in gymnastics. Survey responses include their best recollection of when they began gymnastics and their history of low-back pain. A Pearson Product Moment correlation will analyze for a significant relationship (alpha less than 0.05), among low-back pain and/or injuries and number of years of participation. Expected results may indicate more injuries with longer gymnastic participation. Survey collection is in progress. IRB # 1112-0127.

**Keith Diers**

Sponsor: Kyle Momsen, Health & Exercise Science

*Faculty/Staff Lounge, Session A*

“Changes in Shoulder Range of Motion of Collegiate Overhead Athletes over a Two Month Period”

Context: Overhead athletes have altered range of motion (ROM) in their dominant shoulder due to the demands of their sports. Many of these athletes have a loss in glenohumeral internal rotation in their dominant shoulder, which is associated with shoulder injuries.
Objective: To assess shoulder internal and external ROM in competitive collegiate overhead athletes during preseason and at two months into the season in order to examine changes in ROM that occur.
Design: Observational, repeated-measures study.
Setting: Athletic training room of a NCAA Div III Institution.
Participants: Thirteen (to Twenty-Two) National Collegiate Athletic Association Division III overhead athletes (10 volleyball, 2 football (QBs), 1 swimming, (4 baseball, and 5 softball)).
Main Outcome Measure(s): Glenohumeral Internal Rotation (IR) and External Rotation (ER).
Results: Preliminary results show that IR in both the dominant and nondominant shoulders decreased over the 2 month playing period with a 95% confidence interval. The average change in the dominant shoulder was 7.8 degrees and in the nondominant shoulder was 11.5 degrees. The results also show that ER in both shoulders did not change significantly over the same 2-month period.
Conclusion: Healthy Division III overhead athletes did not display changes in glenohumeral ER over the course of 2-months of the playing season. But they did decrease IR in both shoulders over the same period of time. Future research should investigate the differences among the athletes in the different overhead sports.

**Hollie Edlund**

Sponsor: Melissa Rolnick, Theatre & Dance

*Faculty/Staff Lounge, Session A*

“Movement For Movementsake”

In my process in creating this dance piece, I wanted to create a work inspired by Bob Fosse and Jerome Robbins' movement style. Spacial patterns were my interest from the beginning as well as the craft of the piece. This year, I have become interested in the concept of familiarization. I wanted to create something that the audience could relate to their own life; the intention was to make the audience laugh! I was interested in the movement from "Rich Man's Frug" from Sweet Charity in which Bob Fosse choreographed. I pulled specific movements and made them my own or used them in different ways.

In the past, I have seen dance pieces at Gustavus with a hidden meaning that confused people, especially my peers. I realized my peers weren't as interested in my dance concerts because of the confusing dance pieces. I took this observation and brought that into my craft. I wanted to draw my peers back in by creating something (hopefully) comical without an abstract meaning; meant for pure observation and enjoyment.

In the process, my dancers and I have collaborated and are happy with the outcome.

If you would like to see the piece, go to http://vimeo.com/62586162. :)

**Lars Ericson**

Sponsor: Mimi Gerstbauer, Peace Studies

*Faculty/Staff Lounge, Session A*

“Segregation Lives: 60 Years After Brown Versus Board Of Education Segregated Schools Divide America”

60 years ago the Brown versus Board of Education case ruled that the segregation of schools based on race was unconstitutional. Today studies show that American schools are still highly divided by race. Using the Brown versus Board of Education case as a starting point, my paper will examine the extent of this ruling’s impact on American schools today. I will explore why schools today are still separated along racial lines, studying not only issues of race but also intertwining issues of socio-economic status and achievement. It is argued that although the Brown versus Board of Education case monumentally abolished institutional segregation within schools, segregation is a daunting issue in the classroom today, perpetuating inequality and racial tension.

**Courtney Farland**

Sponsor: Stephanie Otto, Health & Exercise Science

*Faculty/Staff Lounge, Session B*

“Gusties love group exercise”

In a previous poll in which Gustavus students suggested the activities they partake in other than drinking, attending exercise classes ranked within the top 5 activities. The mission of this proposal was to assess the current exercise classes and determine ways to involve additional students. Through the Coca-Cola Educational Partnership Grant, the Health Major's Club was able to purchase brand new yoga mats, stamped with the Gustavus emblem. These mats will be readily available at the red desk and can be utilized by students at any time during the day. The mats will also be available for instructors to use during their classes, as there was not previous access to this exercise equipment. Funding was also spent on advertisements and marketing. Through these purchases, it is the hope of the Health Major's Club that students will become more familiar with the classes, equipment, and their role in optimizing their overall health.

**Kexin Feng**

Sponsor: Sheng-Ping Yang, Economics & Management

*Saint Peter Room, Session A*

“The Impact of Health Insurance Coverage on the Choices of Medical Services: A Multinomial Logit Approach”

 Despite the fact that China' economy has been growing remarkably in the last decade, public healthcare did not improve along with the whole system. The escalating cost of healthcare has led to notable impoverishment. More than 35% of urban and 43% of rural households have difficulties affording health care or are impoverished by the costs (Hu et al, 2008). Hospital stay in rural areas was 1.8 times as costly in 2005 as in 1995, but the average disposable income rose only 1.1 times over the same period (Yu DZ, 2005).
 In addition to commercial policies, there are four major healthcare insurances in China. Free Medical Service, which is offered by the Government, is a free service for its civil servant; Urban Employee Basic Medical Insurance covers urban employees; Urban Resident Basic Medical Insurance is for urban citizens who are not covered by UEBMI; and, New Cooperative Medical Scheme is for rural residents.
 This paper analyzes how the types of insurance people have affected their choices of healthcare services in China. Data from a Chinese Nutrition Survey are used to examine the factors that influence people's health care choices. Using a multinomial logit model, we find that the types of insurance people have is a major factor that affects their use of medical services. While people with commercial insurance tend to visit private clinics and hospitals, others are more often going to public clinics and hospitals. Civil servants with Free Medical, on the other hand, are more frequently going to workers' hospital than others. Moreover, working status, living site and marital status influence enrollees' utilization of health services positively, and employed, married and urban participants obtain more health services than unemployed, single and widowed, and rural participants.

**Laura Flicek, Samantha Thrane**

Sponsor: Ana Adams, Modern Languages, Literatures, and Cultures

*Three Crowns Room, Session A*

“Engaging Minority Entrepreneurship: A Partnership in Support of the Entrepreneur Doorway Project”

In partnership with La Mano’s Entrepreneurial Doorway Project (EDP), the Greater Mankato Diversity Council and the Small Business Development Center (SBDC), students in Spa 390- Spanish film class are working to increase awareness about the growing potential and opportunity behind minority entrepreneurship and the innovation by the EDP/SBDC to find solutions to the pervasive roadblocks minority entrepreneurs still face today. The Spa 390 class has produced a series of videos that, together, introduce the story of minority entrepreneurship in South Central Minnesota with the goal of providing information about services and resources but also engaging the community in discussion about the business opportunities for minority entrepreneurs. Students will share informations about the project and the partnership, as well as showcase their video work and preliminary findings.

**Hannah Forster, Kelly Okerman, Aurie Domholt**

Sponsor: Michele Koomen, Elementary & Secondary Education

*Three Crowns Room, Session B*

“ Recognizing the Middle Child: Under Which Circumstances Do We Overlook These Students and Why?”

The purpose of the study was to investigate the trend of the invisible-middle child within the elementary school classroom. During practicum teaching the teachers noticed that the students who were performing at a middle level (neither students who excelled nor students that needed special attention) tended to be overlooked in the classroom. This study investigates this trend within classrooms and teaching. To complete the study videoed lessons have been reviewed, notes have been taken about the classroom environment, interviews of the “invisible-middle” have been recorded, and outside research has been brought in. The study provides evidence of when and why students are overlooked as well as offers suggestions of how the invisible-middle can be incorporated into the classroom and ensure that their needs are met.

**Katherine H. Frehner**

Sponsor: Beatriz Torres, Communication Studies

*Saint Peter Room, Session A*

“The Dangerous Uses of Online Support Groups: A Cyberethnography on My ProAna
”

Communication online has increased rapidly since the creation of the internet, and has in some cases began to replace the functions of face-to-face communication. With the growth of support groups online, their openness and member-established conversations make way for great opportunities for positive encouragement, but also create a space for negative encouragement and support for unhealthy behaviors to flourish. In this ethnography, I researched My Proana.com, an pro-eating disorder online support group to see how members use the site to fulfill their needs, and why they feel the need to become a member of this group and identify with it. Using Steinkuehler & William's (2006) model of online communities as "third places", this research exposes the negative outcomes of online support group communication.

**Ava Goepfert**

Sponsor: Patricia English, Communication Studies

*Saint Peter Room, Session A*

“From Home to Dorm: First Year Students' Meanings of Home”

Wrought with anxiety, a dash of homesickness, and the promise of independence, surprises fill the transition from childhood home to college dorm room for first-year students. As a significant moment in many young people’s lives, scholars and educators have focused on the first-year experience for decades. However, studies on the experience of first-years concerning home are scarce, despite the importance of home within the academic world. Studies concerning other groups of people show disruption of home causes people to truly analyze what home is and means for them. Specifically, for first-year students who have never relocated before, home begins to have more meaning and significance after their transition to college. This study examines the ideas of home of seven first-year students from a Midwestern college through in-depth interviews that reveal their revelations, anxieties, and contemplations concerning their childhood space. Within their “thick descriptions,” essential themes emerge to help scholars understand what home, for this group, is all about.

**Karl M. Grant**

Sponsor: Eric Dugdale, Classics

*Saint Peter Room, Session B*

“How Herakles Helps Us Tell Better Stories: Intertextuality as a Narrative Tool”

This thesis examines the literary topic of intertextuality, the relationship between texts, through the lens of Herakles’ appearances in ancient Greek tragedy, namely Sophocles’ "Women of Trachis" and Euripides’ "Herakles." Herakles (also known by his Latin name Hercules) is a prominent figure in Greek mythology and tragedy alike. Curiously, Herakles’ tragic characterizations are greatly varied. These frequent yet dissimilar incarnations of Herakles suggest that playwrights valued him not only as a character per se, but also as a vehicle with which to more compellingly communicate themes such as masculinity and fatherhood; the ancient Greeks’ familiarity with Herakles allowed tragedians to characterize him with more narrative power. Imagine if Wile E. Coyote actually caught the roadrunner, or if Frodo’s faithful companion, Sam, stole the One Ring for himself and rose to power over Middle Earth. Because we are familiar with the characters and their traditional stories, these illustrations are much more vivid than a story of some predator animal hunting its dinner or a generic betrayal of trust. By analyzing the intertextual relationship between the mythological Herakles and the tragic Herakles, I will demonstrate how use of audience knowledge is key to compelling communication on any level, in any setting, and through any medium.

**Daria Grishina**

Sponsor: Thomas Gardner, Chemistry

*Saint Peter Room, Session A*

“Towards a Novel Switchable Aromatic Hemiporphyrazine Ligand”

Hemiporphyrazines are a well-known class of non-aromatic 20 π e- tetraaza rings. The recent report of a novel dicarbahemiporphyrazine ring system that is 18/20 π e- switchable to aromaticity (J. Am. Chem. Soc. 2012, 134, 190-193) has inspired us to pursue the synthesis of an analogous hemiporphyrazine ring that can serve as a novel switchable aromatic ligand for metal complexes. This presentation reports on the synthesis of this hemiporphyrazine, and its use as a switchable ligand.

**Tiamat Gustafson**

Sponsor: Mimi Gerstbauer, Peace Studies

*Saint Peter Room, Session B*

“Overthrowing the Red State: The Impossibilities of Life Within a Prison Camp”

 What are the problems in the society of North Korea? Is the communist dynast of Kims oppressive to the point of killing millions of people within North Korea? This paper will explore necessary humanitarian intervention. The existence of modern-day concentration camps in the Democratic People’s Republic of Korea is in violation of the human rights charter of the United Nations. How and why have western democracies failed to intervene in North Korean human rights violations? Intervention of democratic forces against the Nazi regime in World War II. remains the reference point for any humanitarian intervention. It is argued that the most effective form of social change comes from within the state itself, but given the circumstances of oppression under corrupt regimes, how is this possible?

**Jennifer Hernandez, Abby Schnorr**

Sponsor: Ana Adams, Modern Languages, Literatures, and Cultures

*Three Crowns Room, Session A*

“Engaging Minority Entrepreneurship: A Partnership in Support of the Entrepreneur Doorway Project”

In partnership with La Mano’s Entrepreneurial Doorway Project (EDP), the Greater Mankato Diversity Council and the Small Business Development Center (SBDC), students in Spa 390- Spanish film class are working to increase awareness about the growing potential and opportunity behind minority entrepreneurship and the innovation by the EDP/SBDC to find solutions to the pervasive roadblocks minority entrepreneurs still face today. The Spa 390 class has produced a series of videos that, together, introduce the story of minority entrepreneurship in South Central Minnesota with the goal of providing information about services and resources but also engaging the community in discussion about the business opportunities for minority entrepreneurs. Students will share informations about the project and the partnership, as well as showcase their video work and preliminary findings.

**Sam Hoppe**

Sponsor: Mimi Gerstbauer, Peace Studies

*Saint Peter Room, Session A*

“Moving Towards Restorative Justice In The US Prison System”

In this project, I will be giving a brief overview of the philosophical conceptions of retributive, restorative, and utilitarian justice in relation to punishment. I will then give a brief examination of the United States "tough on crime" policies since the Nixon administration. Using this information I will argue against the current prison policies in the United States, while also arguing for a justice system that focuses more on restorative justice. Finally, I will use examples of other countries prison systems as a possible future model for the United States penal system

**Matt Humphries**

Sponsor: Mimi Gerstbauer, Peace Studies

*Saint Peter Room, Session B*

“Nonviolent "Weapons" Are More Effective than Violent Ones”

Gandhi and Martin Luther King Jr. are excellent examples of people that ran nonviolent movements to change the world. They didn't need to hurt anyone or destroy anything to make their point. They used nonviolent "weapons" to be effective against people that hated them which can be compared to people like Malcolm X and Nelson Mandela who did use violence to enforce their argument. Both options may have been effective in their own ways, but which ones worked to their full effect with the least amount of losses? This paper will discuss how different leaders used violent or nonviolent efforts to fuel their movements, and will support the argument that nonviolent weapons are more effective than violent ones.

**Katharina Janzen**

Sponsor: Mimi Gerstbauer, Peace Studies

*Saint Peter Room, Session A*

“How Mennonite Teachings Build a Culture of Peace”

The Mennonite people are known for their simple and pacifist lifestyle. But what in their theology and teachings leads to this peaceful life? Throughout history the Mennonites, along with other Christian pacifist groups, have championed non-violence and worked to resolve conflicts peacefully, as well as build a lasting peace with those in their local and international communities. The Mennonite teachings are effective in building peace because they outline the type of life a person should lead to promote peace.

**Mariecus C M Jarvis, Audrey Messelt, Karla Marz**

Sponsor: Karla Marz, Biology

*Heritage Room, Session B*

“Mapping the Period (PER) Binding Surface of the Circadian Clock Protein Cryptochrome (CRY)”

Circadian clocks control many rhythms in organisms, often by telling them to produce different proteins at different times. These biological clocks function through feedback loops that are completed every twenty-four hours. In one negative feedback loop, genes for the clock proteins Cryptochrome (CRY) and Period (PER) are transcribed in the nucleus and translated in the cytoplasm. CRY and PER proteins subsequently bind each other and travel back to the nucleus, where they inhibit their own transcription, closing the loop. Eventually the protein complex degrades and transcription of these circadian clock proteins can occur again, with the pattern repeating each twenty-four hours. In order to better understand the clock mechanism, we studied the binding behavior of CRY and PER in isolation using HEK-293 cells, which do not have clocks but will make CRY and PER if given DNA coding for them. By itself, PER is found in both these cells’ nucleus and cytoplasm, but if wild-type CRY is present it binds PER and pulls it into the nucleus. We can see this shift in location via immunocytochemistry and fluorescence microscopy. Using this approach, we examined PER binding by a panel of site-directed CRY mutants, and identified a set of amino acids on one surface of CRY that are important for binding to PER.

**Gena Jenniges**

Sponsor: Mimi Gerstbauer, Peace Studies

*Heritage Room, Session A*

“Resource Wars: Is Privatization Really the Answer? ”

Resources are an important part of any nations’ economies and well-being; in addition many nations depend on particular resources more so than others. Because there are only so many resource in the world, there can be disagreements over who controls them and how. The control of water has been one such resource that has caused controversy. One method of regulating water that people have tried is privatization. Sometimes the results are less than hopeful, as was the case in Cochabamba, Bolivia. This makes a person wonder if the privatization of such a vital resource should ever be done at all.

**Amy Jensen**

Sponsor: Mimi Gerstbauer, Peace Studies

*Heritage Room, Session A*

“The Myth of War For The U.S. Needs De-glorification”

War has great importance and use in the United States. As a nation we thrive off of the suspense and mythical divine hero-ness in combat. We dehumanize the enemy and feelings of guilt the soldiers set aside. Minds get caught up in the myth of what it means to fight for what’s right. What does that give the United States except an enemy list? This paper will look specifically at how the U.S. perceives war and how with that, as a country we need to de-glorify our willingness to go to war in our minds. Where is the forgiveness? Is it all about guilt and winning? Mindsets of Americans on the subject of war must change so war is de-glorified and the world can have some peace.

**Elizabeth Johnson**

Sponsor: Kathi Tunheim, Economics & Management

*Heritage Room, Session A*

“Sweden: Pioneering Gender Equality and Advocacy for Women in Contemporary Enterprises and the Home”

Scandinavia is leading the world in gender equality. Of these progressive Nordic countries, the United Nations Commission has identified Sweden as one of the best countries for women to live and work. This presentation draws on qualitative, phenomenological research aimed at understanding why Sweden is at the forefront of women's advocacy. Similarly, the study investigates how Swedes have become so successful in cultivating an environment for women to thrive in the workplace while balancing family and domestic life responsibilities. Data is derived from in-person interviews with working women in both metropolitan and rural areas of Sweden. The women involved in this study represent a diverse set of circumstances, personal histories, and lived experiences; however, the majority of the research participants are women with children who work in management. Our findings suggest that women are able to achieve this precarious balance in work and home life due, in part, to the support they receive from a wide range of government sponsored initiatives. These government policies have encouraged female participation in the workplace and have allowed for reentry into the workforce for women with children due to the generous shared parental leave, flexible work accommodations and scheduling as well as availability of state subsidized childcare.

**Jenna King**

Sponsor: Mimi Gerstbauer, Peace Studies

*Heritage Room, Session B*

“Homosexuality in Islam Nations”

 Nations have made news the past year on struggles that homosexuals and transgender people face expressing their sexual orientation. Islamic law teaches that homosexuality is sinful and is punishable by death. Understandably, having the "wrong" sexual orientation becomes a social taboo in such a nation. This research paper will explore deeper into the Qur'an's stance on homosexuality, Islamic countries' laws concerning gay marriage and gay rights, and social movements aiming to make Islam nations more tolerant of the LGBT community. Although gay rights may threaten some aspects of the Islam teachings, it will be argued that social equality is important and can be embraced while still adhering to the values of Islam.

**David Kramer, Kayla Shrupp**

Sponsor: Bruce VanDuser, Health & Exercise Science

*Heritage Room, Session A*

“Myofascial Release (Foam Rolling) On The Sit And Reach Test And One-Mile Run”

Athletes are always looking for something to give them that extra edge. Myofascial release (MR) has become increasingly popular over the last few years in the world of health and fitness. Curran (2008) reported significantly higher pressure and isolated contact area with the foam roller. These results suggested that there were potential benefits in self-myofascial release. Because of the increased popularity of foam rolling in the fitness community, there are questions regarding if it actually works and what are there benefits. The purpose of this study is to observe the effects foam rolling has on flexibility (sit and reach test) and the one-mile run in recreational runners. Eight subjects from a Division III college participated in this study. A one-sample experimental design was used to compare differences in the dependent variables of sit and reach flexibility, one-mile run time, and perception survey scores between pre-foam rolling and no pre-foam rolling conditions. Subjects participated in four different trials (two with pre-foam rolling and two without pre-foam rolling). Multiple paired t-tests indicate that foam rolling prior to the one-mile run had a significant decrease (p < 0.05) in one-mile time (7.08 minutes ±.61: 7.2 ± .57) and a significant higher survey scores (17.87 ± 2.26: 15.93 ± 1.4). A higher score reflected better body feeling. The sit and reach test indicate no significant difference (p > 0.05) between pre-foam and no pre-foam use (14.87 ± 1.2: 14.96 ± .88). Based on the results of this study, foam rolling prior to running may decrease run time and create a better overall body feeling while running.

**Tim LaBombard**

Sponsor: Anna Versluis, Geography

*Heritage Room, Session B*

“Land Use Change Due to Mississippi River Flooding in Southern Minnesota”

My research focuses on land use change due to Mississippi River flooding. What land use change has occurred due to Mississippi River flooding in Southern Minnesota over the past fifteen years? I will use satellite images to highlight the changes over the past fifteen years. I will be working with Landsat and MODIS imagery. I will also be looking at flood data from the DNR and other information from the state of Minnesota. I believe I will find that a lot of man made structures have disappeared and a lot of vegetation and wetlands have taken over. This study is very helpful in seeing what future trends will be like for these areas and other areas that are affected by flooding.

**Kirsten Larsen, Rachel Larson**

Sponsor: Rachel Larson, Chaplain

*Heritage Room, Session A*

“Labyrinth in Linnaeus Arboretum”

A labyrinth is a unicursal-designed path intended for reflection, meditation and prayer. It is a classic physical means of facilitating the metaphorical cycle of going inward and returning outward. Derived from many different cultures all over the world, labyrinths can be found at churches, hospitals, fields, gardens and homes. Gustavus' emphasis on faith and spiritual practice has inspired a variety of contemplative spaces on campus, including the interfaith space in Jackson Student Center and the natural meditation area in Linneaus Arboretum. Having a labyrinth in the arboretum will provide an outdoor space for people of any spiritual expression or philosophical commitment to incorporate reflection into their lives. Such practices also sustain people over time, so they can live fuller lives and better work for the well-being of all.

**Trang H. Le**

Sponsor: Beatriz Torres, Communication Studies

*Heritage Room, Session B*

“ Understanding the BullyOnline Forum through Social Exchange Theory”

Workplace bullying tactics can range from derogatory comments to public humiliation or physical abuse. These tactics unquestionably lead to decreased workplace productivity. Through BulyOnline forum, its members share their own experiences and advice about workplace bullying. This cyberethnography examines the structure and function of this online group (2,573 members) through the lenses of Social Exchange Theory. The study demonstrates how this forum provides deep emotional support and detailed advice through social interaction and relationships beyond geographical distances.

**Karla Leitzman**

Sponsor: Amy Seham, Theatre & Dance

*Heritage Room, Session A*

“Performing A One Woman Show: The Edge Of Our Bodies by Adam Rapp”

Last spring, the department of Theatre and Dance announced that they would be providing me with the resources to perform a one woman show, "The Edge of Our Bodies" by Adam Rapp this November. Written in 2011, Gustavus' production performed as a part of its biennial student run theatre gallery, was only the third time it had every been performed.

Were I to be given the opportunity to present at Creative Inquiry, I would present pieces of the show's creative process, the design process and various research methods which were used by myself as the sole actor, the student designers and how I was able to effectively work with my advising faculty member while still maintaining creative license and vision.

I will show parts of the script, exhibiting how I went about memorizing ninety minutes of text, production photos, and go into detail of the script analysis process including how my faculty adviser, Amy Seham, constantly pushed and encouraged me to keep asking questions and more fully understand the text of what I would be performing. The end product was a great success and I look forward to showing it to the campus.

**Kelsey Lucia, Kassandra Lueth**

Sponsor: Heidi Meyer, Nursing

*Saint Peter Room, Session A*

“Knowledge of Human Papillomavirus and Vaccine in Young Adult Males”

It is estimated that three in four sexually active people have some strain of Human Papillomavirus (HPV) making it the most common sexually transmitted infection (STI) today (Centers for Disease Control and Prevention, 2012). HPV is symptom free the majority of the time and it is known to cause genital warts and various forms of cancer in both men and women. Even though vaccines are available for both males and females to help prevent and protect against certain HPV strains, there is very little research demonstrating awareness and willingness to receive the HPV vaccine in young adult males. The purpose of this research study is to explore the knowledge of HPV and vaccine in young adult males and to determine if there is a correlation between knowledge and willingness to receive the vaccination.
 Knowledge of Human Papillomavirus and in young adult males is a research study in progress. IRB approval was obtained for this study. Data collection runs from December 7th, 2012 through December 12th, 2012. Participants in this study will include male students, ages 18-24, at a liberal arts institution in a rural mid-western setting. This two part survey will be made available to males inside of the commons area of the college campus center. The first part of the survey is a true/ false questionnaire that assesses male's general knowledge of HPV and the vaccine. Part two of the survey assesses willingness to receive the HPV vaccine, as well as openness to education on the vaccine. Descriptive and correlational statistics will be used to analyze the data. It is anticipated that male's knowledge of HPV and the vaccine is limited and that they are not receiving the HPV vaccination. It is also anticipated that there will be a correlation between the amount of knowledge and willingness to receive the vaccine/vaccination status. Results from this study will have implications for future research on HPV and the vaccine, with possible specific implications for health education practices that would include more teaching of HPV and the vaccine, specifically in the young adult male population.

**Matthew Lunde**

Sponsor: Bruce Van Duser, Health & Exercise Science

*Saint Peter Room, Session B*

“Difference in Maximal Oxygen Uptake and Lactic Acid Accumulation Between Singles and Doubles Tennis Athletes ”

Tennis is a short-duration and high intensity sport which is demanding on the body (Luque et. al, 2011). Aerobic fitness during long matches is a key component, and a player’s maximal oxygen uptake (VO2max) may result in better performance and effective recovery time between points (Ferrauti et. al, 2011). Tennis athletes are aerobically fit; however, studies that examine differences in aerobic fitness between singles and doubles are lacking. The purpose of this study was to examine differences in VO2max and lactic acid accumulation (Lc) between singles and doubles tennis athletes. Four singles and four doubles Division III men’s tennis athletes volunteered for this study, and tennis athlethes classified themselves as what type of a player they are. A parallel group experimental design examined differences in the dependent variables of VO2max and Lc between the independent variables of singles and doubles groups. The Balke-Ware submaximal treadmill protocol estimated VO2max which had oxygen uptake and LC measures taken at 85% of age-predicted max heart rate, 208 – [.7(age)]. Blood droplets from finger pricks and a Accu-Sport lactic acid analyzer determined Lc. Independent t-tests revealed a significant higher (p < 0.013) in Lc in the doubles (mean 15.3 ± 1.24) compared to the singles (11.87 ± 1.51). Oxygen uptake at 85% of heart rate max was not significantly different between the groups (DG 37.9 ± 3; SG 43 ± 6.94). Based on the results of this study, singles tennis players had lower lactate and higher VO2 which made them more aerobically fit.

**Danielle Mangine**

Sponsor: Thomas Gardner, Chemistry

*Saint Peter Room, Session B*

“Diels-Alder Reactions of Prochiral 1,5-Disubstituted Anthracenes Towards the Creation of Chiral Auxiliaries and Ligands”

Diels-Alder reactions of prochiral 1,5-disubstituted anthracenes have received surprisingly little attention, not to mention their further development into chiral auxiliaries and ligands for possible use in chiral catalysis. This presentation reports on the study of the Diels-Alder chemistry of principally two 1,5-disubstituted anthracenes, 1,5-diphenylanthracene and 1,5-bis(phenylmethoxy)anthracene, with dienophiles such as dimenthyl fumarate, fumaronitrile, and dimethyl acetylenedicarboxylate, and their subsequent development into useful chiral auxiliaries and ligands.

**Christina Mantey**

Sponsor: Barbara Zust, Nursing

*Saint Peter Room, Session B*

“Cultural Ethical Challenges: Exploring the Lived Experience of Nurses Caring for Culturally Diverse Patients”

Although the United States healthcare system is one of the most extensive in the world, it continues to struggle to adapt to the immense and diverse cultural needs of its people. Numerous studies indicate that providing culturally sensitive care and support during labor and delivery leads to better birth outcomes for both the mother and the infant. Unfortunately, some patient’s cultural practices and beliefs can become ethical dilemmas for midwives and labor and delivery nurses when safety is compromised. The purpose of this qualitative study is to explore the lived experiences of midwives and labor and delivery nurses in caring for culturally diverse perinatal patients. Following IPR approval, midwives and labor and delivery nurses were invited to participate in this study through flyers and snowball sampling. The open ended question: “Tell me about a time when you have been challenged ethically or professionally by the request of a patient or their family?” was used to begin the dialogue. All participant interviews are tape recorded and transcribed as narrative data. Van Manen’s (1990) interpretative research method was used for analysis. Preliminary analysis indicates that four themes have consistently emerged: Partnering with the patient through cultural humility; Birth plan: Listening beyond the requests; Internet culture: Challenged by credible and erroneous information; and "Americanization": Suppression of Culturally Traditional Practices. Findings from this study will add to the body of knowledge that sheds light on the challenges in nursing practice in caring for diverse perinatal patients.

**Chris Masad**

Sponsor: Eric Dugdale, Classics

*Saint Peter Room, Session A*

“The Roman Theater as an Empirical Tool”

Opera boxes and front-row seats in today’s theater mainly give privilege to those of greater wealth, but in imperial Rome, the seating situation of the audience held sociological implications for all classes in the political arena. This project focuses on how the physical layout of the Roman theater developed into a political tool in the imperial period which would affect theater festivals called ludi solemnes, which had a religious background. This study will address certain questions: what is the layout of a typical Roman theater? What were the seating arrangements and their effects on society and politics? Did the performers contribute to these effects? Using primary sources such as Tacitus and Suetonius, along with modern interpretations of the texts as well as archaeological evidence, this project can help explain the relationship between the Roman theater and the social response of the audience.

**Chris Masad**

Sponsor: Anna Versluis, Geography

*Saint Peter Room, Session B*

“Comparing Greek and Roman Geographers”

In the third century B.C., the ancient Greek Eratosthenes measured the circumference of the Earth using the length of a stadium as his unit of measurement, only to an error of less than two percent. Until this time, geography, the Greek word for earth-writing, was not deemed a singular discipline, but a multi-disciplinary hobby including philosophy, math, religion, and myth to help describe the world. In these times, there was a lack of the cross-cultural contact that is so convenient today. Scholars of the ancient world were therefore focused on discovery and observation, relating to the places they went and the people they met while today’s geographic disciplines focus on improving what we already have or know. This study will focus on how the study has changed based off of two famous ancient geographers, a Greek named Eratosthenes and a Roman named Strabo based off of their writings, their historical context, their reliability, how realistic they are, their political climates, and how their literature relates to myth, prose, philosophical and geographical writings from both ancient and modern times in order to see the early stages of geography.

**Zoë May**

Sponsor: Mimi Gerstbauer, Peace Studies

*Heritage Room, Session B*

“Can We Create Peace Through Food? Addressing Gender Disparities And Building Stronger, More Peaceful Communities Through Food Production”

Under the growth of globalization, there are increased changes in how food is produced and accessed around the world. With changes in technology, there are in turn effects upon communities, and the people who are a part of them. Can this integral aspect of life, the production of food, be used to create peaceful relations? This paper seeks to explore what role food production can have upon a community, and how it influences the social dynamics within such a setting. Focusing in particular upon communities in developing nations, this paper shall examine how having a role in and relationship with one’s food— through agriculture, seed preservation, and sharing traditions— there can be positive effects on the land, and the people. By encouraging roles of power for women within society, providing food security, preserving cultural practices, and building relationships within a community, can peace be encouraged? This paper seeks to explore research and examples to argue that this is possible.

**Amanda Miller, Dan Moos**

Sponsor: Dan Moos, Elementary & Secondary Education

*Heritage Room, Session A*

“The Role of Epistemological and Self-regulated Learning Beliefs in Pre-Service Teachers’ Evaluation of Lesson Plans”

This study examined how epistemological beliefs (EB) and self-regulated learning beliefs (SRLB) affect pre-service teachers’ evaluation of lesson plans. The sample included 33 pre-service teachers, who were individually run through the study. The participants completed a self-report questionnaire (measuring EB, SRLB, and views of instructional practice), thought aloud as they evaluated two lesson plans, and were interviewed about their views. Participants with more sophisticated views of certain knowledge and innate ability viewed a constructivist approach to teaching as more effective. Participants with stronger constructivist views of teaching made significantly more evaluations based on the lesson plan’s support of self-regulated learning. Participants with stronger traditional views of teaching made significantly fewer evaluations on the student-centered nature of the lesson plan.

**Kristin Moen**

Sponsor: Anna Versluis, Geography

*Heritage Room, Session B*

“Comparing How Work and Family/Life Balance Affects Life Satisfaction in Denmark and the United States”

The factors that produce life satisfaction and quality of life have long intrigued researchers. At the level of nation-states, the type of government and the services it provides play a large part in explaining satisfaction among nations. Among developed, democratic countries, however, there remain large happiness inequalities. Denmark, for example, has much higher life satisfaction, on average, than the United States. While home and family life and employment status influence life satisfaction, research has shown that prioritizing family values over work is a stronger predictor of life satisfaction. My proposed research will employ surveys to compare how individuals in Denmark and the United States are able to balance these important commitments of family and work, and what affect a balance can have on life satisfaction. Comparing work and family/life balance between Denmark and the U.S. and overall life satisfaction can help answer important questions about an “appropriate” balance. This can have further applications for policy makers and employers in regards to offering a balanced work life, increasing satisfaction and ultimately productivity in the work place.

**Kristen Montijo**

Sponsor: Jennifer Ackil, Psychological Science

*Heritage Room, Session A*

“The Continued Influence Effect and Supplementary Misinformation”

The misinformation effect occurs when someone who has witnessed an event is exposed to misinformation and later recalls this misinformation as correct. The continued influence effect is similar, and occurs when misinformation is still recalled as correct even when it has been corrected immediately or soon after exposure to the misinformation. The present study investigated the continued influence effect with regard to supplementary misinformation. Participants watched a short video clip from the movie ‘Looking for Miracles’ and completed a written task. They were given a completed answer sheet and were asked to evaluate the veracity of the answers by writing “true” or “false”. A control group was asked to simply read the answers. Some of these questions and answers regarded items that were not present in the video. Participants returned one week later and were given two memory tests asking whether they remembered certain items from the video and from the answer sheet. Based on previous research, participants who evaluate the veracity supplementary misinformation should recall this misinformation as coming from the video less than participants who simply read the misinformation.

**Briana Mork**

Sponsor: Steve Mellema, Physics

*Heritage Room, Session B*

“Optical Imaging By Reflection Through Random Media”

The objective of this experiment is to observe and measure images produced by a beam of light that follows a designated pathway, a specific setup called a Mach-Zender interferometer. The measurement and observation of the images as well as the control of the lasers takes place using computer software. In order to control very minute movements of the lasers- to increase and decrease distances that the beam of light will travel- stepper motors are used. A USB I/O is able to control the stepper motors and observe and measure data received from the experiment using computer software already existing for the experiment. The planned presentation will talk about future goals and intentions as well as the focus of the semester: integrating software and tools to be able to run the experiment solely from computer input.

**Emma Motl, Xi Wang, Bryan Miles, Kelly O'Neill, Kendyl Greimann, Kayla Hanninen**

Sponsor: Thomas Gardner, Chemistry

*Heritage Room, Session A*

“Construction of Two-Fold Symmetric Phthalocyanines for the Purpose of Creating Linear Coordination Phthalocyanine Polymers”

Our project involves building coordinatively bound polymers that contain phthalocyanine units that are also well-soluble in organic solvents. To do this, we needed to reduce the four-fold symmetry of phthalocyanine down to two-fold, which we are achieving through steric blocking using tetraphenylphthalonitrile. The parts of the polymer that bridge the phthalocyanine rings are coordinative in nature, and we are using existing ligands such as 1,10-phenanthroline and 1,3-bis(2-pyridylimino)isoindoline, and are also exploring a new type of chelating ligand, 1,3-bis(2-imidazolylimino)isoindoline that can adopt various charge states, and therefore accommodate various metal oxidation states. It is hoped that polymers such as these might someday exhibit interesting electronic, magnetic, or chemical sensing properties.

**Peter Moua**

Sponsor: Mimi Gerstbauer, Peace Studies

*Heritage Room, Session B*

“The Ones that are left: Hmong People In An Unwanted Land”

Ever since the secret war where the Hmong people lent a hand to the United States, the Lao government has been hunting down the Hmong people who were involved. The strength the Lao government has on the Hmong people inhabiting the country is far greater than the fleeing Hmong people and much of it can be seen in the government’s media and allowance of their extermination. Their nationalistic views are what drive them to proceed with this treatment of the Hmong people. This argument will be on how the U.S government could be involved with the people who openhandedly helped in the secret war and how/if any approaches are to help in return or for the sake of a Democracy view of peace.

**Adriana Mozo, Sammi Wright**

Sponsor: Ana Adams, Modern Languages, Literatures, and Cultures

*Three Crowns Room, Session A*

“Engaging Minority Entrepreneurship: A Partnership in Support of the Entrepreneur Doorway Project”

In partnership with La Mano’s Entrepreneurial Doorway Project (EDP), the Greater Mankato Diversity Council and the Small Business Development Center (SBDC), students in Spa 390- Spanish film class are working to increase awareness about the growing potential and opportunity behind minority entrepreneurship and the innovation by the EDP/SBDC to find solutions to the pervasive roadblocks minority entrepreneurs still face today. The Spa 390 class has produced a series of videos that, together, introduce the story of minority entrepreneurship in South Central Minnesota with the goal of providing information about services and resources but also engaging the community in discussion about the business opportunities for minority entrepreneurs. Students will share informations about the project and the partnership, as well as showcase their video work and preliminary findings.

**Tyler Mulcahey**

Sponsor: Bruce Van Duser, Health & Exercise Science

*Heritage Room, Session A*

“Comparison Between High-Intensity Resistance Training and Traditional Resistance Training on Strength Gains and Cardiovascular Fitness”

High-intensity training (HIT) resistance programs gained popularity in the 1970s, primarily due to Arthur Jones, founder of Nautilus. Jones described high-intensity training (HIT) resistance programs focused on performing quality repetitions that were brief and were completed to the point of muscular failure. Steele et al. (2012) asserted that these exercises, which were performed at a high level of intensity, produced significant improvement in cardiovascular fitness and stimulated the body to increase muscular strength and hypertrophy. The purpose of this study is to examine the effects of high-intensity training (HIT) and a traditional resistance training programs on gains in strength and cardiovascular fitness. Ten male and ten female asymptomatic, healthy, college students were recruited for this study. A parallel group design will compare differences for gains in strength and cardiovascular fitness between high intensity training (HIT) and traditional resistance training TR groups. Both programs consist of lifts of the bench press, squats, lateral pull-downs, and upright rows. The high-intensity training (HIT) group will perform lifts two times a week at less than or equal to a 6RM for two sets. The TR group will perform these lifts two times a week at 8-10RM for three sets. Pre and post tests for maximal oxygen uptake (VO2max) and for maximal repetition max (1RM) for the bench press and squat exercises will be collected between a six-week training period. The Balke-Ware treadmill test will estimate maximal oxygen uptake, and 1RM bench press and squat tests will measure relative strength (1RM ÷ body weight). Independent t-tests will analyze significant differences (p < 0.025) in the change of pre and post measures in VO2max and IRM strength tests. Results indicate HIT training has higher strength gains and aerobic fitness compared to traditional resistance training. Based on results of this study, HIT resistance training should be suggested to those in the general college population looking to increase their muscular strength and cardiovascular fitness.

**Ryan Ness, Connor Norris**

Sponsor: Bruce Van Duser, Health & Exercise Science

*Heritage Room, Session B*

“Plyometric VS Squat/Power Clean on Vertical Jump and 30 M Sprint Performance in Non-Athlete Women”

Explosive power is the key to success in many sports. How would explosive strength in women who are not involved in a sport benefit from explosive training? The goal of this study is to compare which mode of training, plyometrics or squat and power clean, are more effective in creating explosive strength in a population that does not participate in explosive training. (Goran et. al. 2007) reported that plyometrics are an important exercise for becoming more explosive. Weight training produces similar or even greater training effects in muscle function and athletic performance than does conventional plyometric training (Markovic et. al. 2007). The purpose of this study is to examine the effects of plyometric training compared to power clean and squat training on vertical jump and 30 meter sprint performance in female non-athlete college students. Twelve college aged women will be asked to participate in the study and be split equally and randomly between the two groups. A parallel group design will be used in this study. All participants will complete two tests twice measuring both vertical jump (VJ) and 30 meter performance (30M). The participants will engage in a pre-test measuring VJ and 30M before and after one month of either plyometric training (PL) or squat and power clean training (SC). The independent variables will be the plyometric and squat/power clean training. The dependent variables will be the vertical jump and 40 meter sprint performance. Significance of data will be measured through a paired sample T-test. All data is simulated.

**Trevor Oestenstad**

Sponsor: Annabel Landaverde, Admissions

*Heritage Room, Session A*

“Bienvenidos a Gustavus: Translating Admission Materials and Its Implications”

Birthed from the independent project portion of the College Access and Translations Internship with Gustavus Admissions, the present study seeks to examine what it means for the college to translate key marketing and promotion pieces into Spanish. Why is Gustavus doing this, and why is it important that Gustavus do this? How does this align with Gustavus´s five core values? Does the process start and stop with translating admission pieces, or is that important that this be paired with other things? In order to explore answers to these questions, a survey of literature is done about Latino college access in the United States, as well as possible achievement/aspiration gaps. Also, Latino students both on and off campus are interviewed about their college application process and college experience.

**Sophia Ogren-Dehn, Greg Wiessner, Alex Christianson**

Sponsor: Jim Dontje, Environmental Studies

*Heritage Room, Session B*

“Coca-Cola Educational Partnership Grant: Big Hill Farm”

The Big Hill Farm is an organization committed to researching and producing sustainable food. Every year, interns plant, maintain and harvest our piece of land and sell the majority of the produce to the Gustavus Marketplace. This year the Big Hill Farm applied for, and received a Coca-Cola Educational Partnership Grant in order to purchase a new shed to store our equipment. The Big Hill Farm is becoming more and more productive each year, and this shed is one important step in our journey towards a more sustainable and local food system for Gustavus, and for the world.

**Rachel P. Oien**

Sponsor: Laura Triplett, Geology

*Heritage Room, Session A*

“Mapping Depth To Bedrock In A Tropical Pre-Montane Wet Forest In Costa Rica”

Accounting for all components of the water balance in a watershed includes an estimate of soil water storage, which in turn depends on the depth to bedrock. The soils in this transitional tropical forest contain large amounts of amorphous material from the saprolitic tuff thus classifying the soils as Andisols. Measuring the depth to bedrock in tropical montane environments is complicated by aspect, elevation, slope, landslides, slumping and other mass wasting events. As part of a larger study, Texas A& M Costa Rica REU aimed to close the water budget for a tropical pre-montane forest, the focus of this study is to generate a map of the depth to saprolitic tuff and topographical information for the purpose of estimating the volume of soil water storage in the Howler Monkey Watershed at Texas A&M University Soltis Center for Research and Education, San Isidro de Peñas Blancas, Costa Rica. A map of the depth to saprolitic tuff was created using 101 hand- augured holes (over 2.63 ha) spatially distributed throughout the watershed. Saprolitic tuff was defined as being 50% of the sample and containing grittiness and cobble sized chunks. To characterize the soils throughout the watershed, soil horizons at three sites were described and 22 cores for particle size. The cores consisted of over 40-55% clay classifying them as clayey or clayey loam. The samples also ranged from 50-73% water content. A map showing the slopes within the watershed also shows the relationship of soil depth above the bedrock within the watershed. The slopes across the watershed vary from 12-65 degrees but only have a 24% correlation with the depth to saprolitic tuff. Results suggest that the depth of the saprolitic tuff is quite sensitive to small scale topographic variability. Soil with such high water content becomes an integral part of the water budget since a significant portion of the water is maintained within the soil. Depth to bedrock provides necessary data to estimate the total volume of soil within the watershed and ultimately the hydrology of the area.

**Chris Olson**

Sponsor: Mimi Gerstbauer, Peace Studies

*Faculty/Staff Lounge, Session A*

“Drones: A Bird's Eye View”

One need only look at the daily headlines to find the mention of drones in our world today. Historically lawmakers have struggled to keep up with the pace of change in global technologies, but never more so than in the past few years. Coming in all shapes and sizes, these marvels of engineering are groundbreaking, some because of their astonishing capabilities and others because of their exceptional simplicity. The lethality of the larger models has caused their use in the Middle East to receive much criticism from the public and the media. Meanwhile, the smaller models are so low cost and have such a straightforward design, that even the public has the means to buy or build their own drones and use them, largely unhindered, however and wherever they want. This gives rise to all sorts of new legal and ethical issues that require immediate attention.
This presentation will do the following: Provide background information about how UAVs have developed and been used since their conception; Analyze and dispute some of the criticisms of UAVs but also identify some legitimate risk factors that need to be taken into consideration; Discuss several of the ethical dilemmas posed by their use both militarily and domestically; Identify several current and potential uses for UAVs and show why their benefits vastly outnumber their risks; Argue for the continued investment into and development of UAV technology as well as the establishment of legal guidelines for their use.

**Tasha Ostendorf**

Sponsor: Jan Wotton, Neuroscience

*Heritage Room, Session B*

“Hoarding Behavior: A Review of Current Research and Theory”

Hoarding behavior in humans has risen to a highly negative status worthy of a pop culture focus. Often associated with OCD conditions, hoarding activities are hazardous to the health and well-being of sufferers. Current research on the subject blends multiple theories in human and animal model research in hopes of discovering an explanation of this behavior as well as effective treatments. The goal of this paper is to present current theories on hoarding, provide examples of current research, highlight treatments, and comment on the future consideration of hoarding.

**Tony Ouradnik**

Sponsor: Mimi Gerstbauer, Peace Studies

*Heritage Room, Session B*

“Democracy: An Optimal Solution”

Democracy is most likely the main reason the United States is essentially at peace compared to other nations around the world. Rather than a monarch ruling the country, our government is run strictly by the people. Whereas an autocracy is run by only one specific monarch, a democracy is made up of members who started as mere citizens of the common crowd, who contributes to the government and its causes. The government may be controlled by the people via elections as well as causes which can influence the higher executives. As everyone is allowed to pool their ideas and contribute to the needs of greater purposes, they are able to suggest to the government ways in which the majority of a population could be willing to compromise. Although not as convenient, there are many ways that democracy can be spread without turning to violence. Several worldwide peace organizations, such as the United Nations, help bring together nations who strive to coexist harmoniously. Because it is run by the public, democracy is an excellent way for the majority of a nation to live together in a safe and peaceful environment.

**Reanna Phillips**

Sponsor: Eric Dugdale, Classics

*Heritage Room, Session B*

“Heroic and Sympathetic Criminals: How Ancient Athenians Understood Morally Complex Figures as Depicted in Tragedy and Pottery”

Ancient Athenian tragedy uses typical plot patterns influenced by cultural norms. Themes such as the reversal of fortune and punishment for defying the gods pervade the tragic plays that were produced by this classical culture. One of the most essential sanctions of Athenian society is the prohibition of familial murder, an act which violates the oikos, or the household and family unit – the very structure of morality to the Greeks. In early Greek culture, it was expected for male family members to avenge violence committed against the family, but instances of interfamilial killing posed a severe threat to this retaliatory form of justice, ensnaring a family with cyclical destruction. There are characters present in Athenian tragedy that appear to defy this cultural taboo by continuing to display heroic characteristics despite having committed such an appalling breach of morality. The figures of Orestes, Medea, and Oedipus have all slaughtered members of their family and despite these transgressive acts, they are portrayed as possessing heroic qualities or given a sympathetic depiction, demonstrated in both Athenian drama as well as in pottery. In tragedy, Orestes, despite having murdered his mother, is given the first trial and was pardoned by Athena. An exiled Oedipus is endowed with a coveted power, while Medea’s characterization and reaction of the chorus warrants sympathy and empathy. These contradictory portrayals of such morally transgressive characters reveal the Athenian’s complex understanding of familial murder. Aeschylus’ Oresteia, Euripides’ Medea, and Sophocles’ Oedipus at Colonus provide the theatrical evidence for the analysis.

**Jasmine Porter**

Sponsor: Anna Versluis, Geography

*Faculty/Staff Lounge, Session B*

“Incorporating Garden-Based Learning Curricula Into School Classrooms”

Research and sustainable agriculture movements emphasize the importance of community and family gardening and aim to reconnect individuals with the natural environment. While many of these efforts have focused on developing countries, recently attention has begun to shift to emphasize the importance of urban agriculture within the United States. Across the country public and charter schools aim to reduce the negative side effects of poverty through the implementation of garden-based learning curricula. This research hypothesizes that schools that have incorporated garden-based learning initiatives into their curricula experience a significant increase in child performance and health. By incorporating a garden-based learning approach into the classroom, students are able to reconnect in their natural environment in a way that has been lost since the introduction of concrete play yards. More than that, this approach may reduce the effects of poverty on children’s nutritional diets and school performance. If true, the incorporation of garden-based learning techniques will move our education from that of mass-production principles to one that is focused on the healthful and holistic development of all students.

**Alexa Potts, Alyssa Gaulrapp**

Sponsor: Lynnea Myers, Nursing

*Heritage Room, Session A*

“High School Students' Perception of Nursing”

Background/Purpose: Student perceptions about the field of nursing may have the largest impact on their decisions to seek opportunities to learn more about the profession.
King, Hardie and Conway (2007) note: “It is essential that school students who are likely to pursue a career in nursing be identified during their high school years”. This purpose exploratory, descriptive study was to examine high school students’ perceptions of nursing.

Method: Institutional Review Board Approval, parental consent and minor assent was obtained prior to the start of the study. Twenty female high school students between the ages of 16 and 17 participated in the survey. Data on high school students’ perceptions of nursing was collected through pre and post surveys administered at the start and conclusion of the Summer Institute, respectively. The survey was designed with using Bloom’s Taxonomy of Learning Domains (1956). Through the Institute, students were able to learn, feel, and practice like a nurse through the cognitive, affective and psychomotor domains. The structure of each day for the Institute was filled with lab skills sessions, lectures, service projects, tours of healthcare facilities, CPR training, and a simulation utilizing a high fidelity human patient simulator. The pre and post survey included qualitative and quantitative measures.

Results: In analyzing the research findings from the pre and post surveys, many common themes were identified from the students’ responses: students viewed nursing as rewarding, challenging, and full of job variety and interaction with people. All students agreed there were certain qualities needed to be dynamic nurses. Nineteen of twenty (19/20) students stated their interest in a certain field of nursing currently resided in pediatrics, with one interested in endocrinology. All twenty indicated the Institute was very effective in helping decide to pursue a future nursing career.

Conclusion: This new and innovative Summer Institute will contribute to the science of nursing in attempting to attract students to a nursing major, as well as fulfill the educational domains of Bloom’s theories on learning.

**Miranda Quirk Becker**

Sponsor: Anna Versluis, Geography

*Heritage Room, Session B*

“What St. Paul Can Learn From Christchurch, New Zealand On Sustainable Living: Composting”

What can St. Paul, Minnesota, learn from Christchurch, New Zealand, about urban sustainable living? This proposed study will investigate how St. Paul can follow the example of Christchurch to reduce waste by instituting residential organics bins for city-based composting. Use of organics bins in Christchurch has been highly successful and can serve as a model for achieving greater sustainability in urban life in the United States.
Data for this research will come from the United States Census looking at neighborhoods in St. Paul. Interviewing people on composting and urban sustainability will be the method used in order to get a feel on what St. Paul residents know and want for their environment. Not only Minnesota, but also the United States as a nation can educate ourselves on what we can do with the environmental change that is occurring every day. Let Christchurch be our model in bettering for a sustainable urban life.

**Saskia Raether**

Sponsor: Mimi Gerstbauer, Peace Studies

*Heritage Room, Session B*

“Ecotourism as an Effective Peacemaker”

Traditionally tourism in ‘third world’ countries has established dichotomies of understanding between tourists, who demand a certain experience, and the local people, who have to change their lifestyle to cater to Western expansionism. This mode of travel has wrecked havoc on cultures and the environments in which locals live. Ecotourism, in contrast, has sprouted out of such unsustainable practices, with the encompassing definition to conserve “natural environments and the well-being of local people through responsible travel.”1 When placed in the right hands, ecotourism can foster community engagement in conserving valuable ecological areas and offer tourists a genuine natural and cultural experience. Unfortunately companies that use this label to promote ‘sustainability’ have misconstrued it for their own benefit. Many literary sources have found this incongruence and view ecotourism as just another form of capitalistic venture. In this light how do affected local people view ecotourism, especially toward the tourists who come and encroach on their land? Are they seen in the same way as tourists in the traditional sense? If not, then the validity that ecotourism can bridge gaps between communities of the modern western world and traditional indigenous societies can be contested. Tourism, even in its most sustainable form, only forms superficial relationships between the two groups rather than strong community ties that can ensure better understanding between cultures and foster peace among nations.

**Griffin Reed**

Sponsor: Aaron Banks, Health & Exercise Science

*Heritage Room, Session A*

“Nature Deficit Disorder: Causes, Effects, and Solutions for Gusties”

Nature deficit disorder is a new threat facing the well-being of people whose time is dominated by technology and indoor recreation. This condition describes the mental, physical, and social costs as people, especially children, are deprived of interaction with nature and unstructured play in the outdoors. The goal of this presentation is to inform members of the Gustavus and St. Peter communities of the effects, causes, and locally applicable solutions to this pervasive ailment.

**Chelsey Richardson, Lexi Quale, Cassie Rogness**

Sponsor: Kari Eckheart and Stephanie Otto, Peer Education & Chemical Health and Health & Exercise Science

*Rundquist Room, Session A*

“Gusties Go Healthy 2013 Well-Being Fair”

"Gusties Go Healthy 2013" Well-being Fair is created as an interactive event to educate the Gustavus community about the importance of a healthy lifestyle and the 9 elements of well-being. This campus-wide event invites all students and faculty to come and explore the elements that make up a healthy lifestyle through different educational groups, student organizations, and community businesses. The event will include music, fitness classes, informational tables, rock climbing wall, and much more. Junior health fitness majors will put on this event and also will host a table that will provide sample exercise programs for students to take. T-shirts, prizes, popcorn, and free promotional/informational giveaways will be part of the event. The fair will take place on Thursday, April 25, 2013 from 2:30-5 p.m in the Lund Arena.

**Jessica Richert**

Sponsor: Eric Carlson, History

*Rundquist Room, Session A*

“Eugenics as a Transnational Movement during the Interwar Period”

While the topic of eugenics has become more popular among historians in recent years and there is now an extensive body of literature on the subject, the vast majority of such literature focuses solely on eugenics movements within one country or nation, with the most common countries being the United States, England, and Germany. There is now a shift toward more comparative studies, reflecting the international nature of the eugenics movement and revealing the underlying trends that allowed eugenics to flourish at both the local and global levels. My research follows this vein, examining the eugenics movement in an often overlooked area, Japan, and comparing it to its more well-known counterparts in the United States and Germany. In addition, this research covers the significance of the interwar period to eugenics and, vice versa, the impact that eugenics had on the societal prejudices and political processes of the interwar period. In looking at the interwar period in Japan, the United States, and Germany through the lens of eugenics, this project will contribute to the growing body of research on the history and impact of eugenics around the world.

**Christine Roering, Mary Joos**

Sponsor: Mary Joos, Health & Exercise Science

*Rundquist Room, Session B*

“Plantar Fasciitis Treatment: A Meta-Analysis”

Plantar fascia is the tight band of connective tissue that originates at the calcaneous and attaches at the metatarsolphalangeal joint, forming the medial longitudinal arch (Roxas, M. 2005) (Orchard, J. 2012). Plantar fasciitis is the most common cause of foot pain and affects two million people in the United States (Stuber, K. Kristmanson, K. 2006). Plantar fasciitis is the inflammation of the plantar fascia and can occur because of trauma or structural deformities (Orchard, J. 2012). Symptoms are characterized as tenderness over the medial tubercle of the calcaneous and pain during the first few steps in the morning (Stuber, K. Kristmanson, K. 2006). Conservative treatment such as electrical modalities, soft tissue therapy, taping, night splints, stretching, ice, and strengthening have been known to be successful however the treatment timeline is varied from weeks to years (Stuber, K. Kristmanson, K. 2006) . The purpose of this study is to determine the most effective treatment for plantar fasciitis through analyzing previously published research. Twelve published research studies were compared. Research journals were found through Folk Benedict library resources. Search titles included “plantar fasciitis” “conservative treatment” and “injection-therapy”. In conclusion, conservative treatment is effective in managing plantar fasciitis however acupuncture, chiropractic therapy, and Botulinum Toxin Type A may be more effective. Further research is needed to assess treatment outcomes.

**Jennessa Runia**

Sponsor: Mimi Gerstbauer, Peace Studies

*Rundquist Room, Session A*

“The Use Of Rape And Other Sexual Violence In Times Of War”

There is growing evidence supporting the idea that rape and sexual violence are increased during times of war. Rape during wartime is usually determined by most to be a weapon of war and used to gain some sort of benefit over the enemy. This paper will discuss why rape rates are increased during war time, and the various ways rape can be used as a weapon. This paper will also look at proposed ways of decreasing rape during war time, and how and why soldiers may be the major contributors to this problem.

**Elizabeth Schmidt**

Sponsor: Patty English, Communication Studies

*Rundquist Room, Session A*

“The Lived Experience of Single Parent Family Members”

I would like to present my findings from my research on single parent family members. I interviewed eight people that are in single parent families/households. After interviewing my co-researchers, I coded the transcripts and found the common themes that were reoccurring throughout the eight interviews. After compiling a literary analysis of articles from other authors about single parent families I analyzed the themes. This was a semester long project with a final paper of the analysis of themes and the literary review.

**Lucas Seewald, Tom Huber**

Sponsor: Tom Huber, Physics

*Board Room, Session B*

“Scanning Vibrometry Studies of Reed Dynamics in Reed Organ Pipes”

In a typical pipe organ, about a quarter of the pipes produce their characteristic tone by utilizing a flexible brass reed to modulate the airflow into the resonator tube. The reed, its fluid-structure interaction with the airflow, and feedback from the resonator form a surprisingly complicated dynamical system. The reed pipe is relatively unique among wind instruments. In most wind instruments the length of the resonator tube plays the primary role in selecting the frequency. In contrast, the organ reed has a relatively high Q-value, and its length of the reed is varied to tune the pipe to produce a specific tone. In the reed pipe, the resonator tube only plays a secondary role of enhancing certain harmonics of the reed to produce the desired tone. To produce a tone, the airflow between the reed and a stationary support, called the shallot, induces a periodic vibration of the reed. The amplitude of the reed vibration increases until, during each cycle, the reed is fully in contact with the shallot. In the current experiment, by utilizing a Polytec PSV-400 scanning laser Doppler vibrometer, it is possible to monitor the operating deflection shapes of a vibrating reed, while using a microphone to monitor the sound production. The poster will illustrate how data is taken and present some of the highlights of what has been found.

**Ian Shay, K. Angelique Dwyer**

Sponsor: K. Angelique Dwyer, Modern Languages, Literatures, and Cultures

*Rundquist Room, Session B*

“Lila Downs: Performing Panlatinidad Through Folklore”

Through the songs in her 2012 tour Pecados y Milagros, Lila Downs claims the three roots of Latin American ethnicity: indigenous, African, and Spanish. After attending three of Downs’ performances in the Midwest (Madison, WI; Iowa, City, IA; and St. Paul, MN), we argue that while Downs’s performance in her tour has a façade of PanMexicanidad (featuring what she calls the three roots of Mexican culture) there are undertones of Panlatinidad, which will be featured in this paper through the performance analysis of “Xochipitzahua,” an homage to the indigenous goddess of corn. We argue that by appropriating ethnic signifiers and mixing them Downs is performing Panlatinidad, which is reflective of how she understands the Latino / Latin American community.

**Daniel Sinda, Sanjive Qazi**

Sponsor: Sanjive Qazi, Biology

*Rundquist Room, Session A*

“Instituting the Concept of Well-Being in Clients With Mental and Physical Instability and Disability”

We developed a research study with Shiloh’s Hope Inc., a small non-profit organization, whom is committed to providing a holistic, person-centered approach to support the physical, intellectual, emotional, and spiritual needs of their mentally ill and vulnerable adult clients. Our goal was to increase commitment to well-being practices in clients through participation in a scientific investigation of skin conductance changes and cortisol responses as surrogate markers for stress responses. Emotive surveys were taken before and after each session to monitor their conscious perception of the experience. Eight trials were conducted over a period of 3 months involving 5 participants per session and 2 sessions per trial. Skin conductance responses were taken from one individual per session and the responses were later discussed. Cortisol measurements were taken 4 out of the 8 trials to monitor long-term changes in the response. Each session included activities, discussions and meditation. Cortisol had significant decreases for paired responses before and after each session (Paired T-test, P<0.01) which indicated a strong trend of increasing response over the 3 month period. Skin conductance responses exhibited marked variation between individuals. The emotive survey responses compared to the cortisol levels related that a change in cortisol is negatively correlated with the response to Q2 (“I feel at ease”). The clients were highly motivated to discuss and participate in this scientific investigation. We presented our findings to the group and we are planning future trials in which the previous participants will help aid in sessions for new clients.

**Zachary Stackhouse**

Sponsor: Anna Versluis, Geography

*Rundquist Room, Session B*

“HIV/AIDS in South Africa”

Since the early 1980s, the rate of urbanization in South Africa has increased rapidly. Given that urban settings are often breeding grounds for the spread of communicable diseases, how has this recent, rapid urbanization affected the spread of HIV/AIDS in South Africa? By evaluating data gathered from urban HIV clinics, Red Cross Stations, and the World Health Organization, I hope to use GIS to better understand the spatial spread of HIV in the urban environment.

**Josie Steinmetz, Anna Ayers Looby, Kacy Lorber, Kayla Hanninen, Kendyl Greimann**

Sponsor: Thomas Gardner, Chemistry

*Rundquist Room, Session B*

“Reduced-Symmetry ABAC Metallophthalocyanine Complexes From a Tethered Phthalonitrile Trimer”

Reduced-symmetry ABAC metallophthalocyanines, with two opposing corners from one type of phthalonitrile and the second and fourth corners from two other, mutually dissimilar phthalonitriles, are notoriously difficult to deliberately synthesize, other than as one component within a statistical mixture of products. Our recent synthesis of a novel tethered phthalonitrile trimer offers a synthetic gateway specifically to ABAC metallophthalocyanines. This presentation discusses the ABAC metallophthalocyanines prepared from this trimer using a variety of metals and “fourth corner” phthalonitrile components.

**Chloe Strand**

Sponsor: Mimi Gerstbauer, Peace Studies

*Board Room, Session A*

“Conflict, Peace, and Children: Building a Brighter Future”

Peace Research has often addressed the role conflict has in the lives of children. It has looked at how violence affects children, how children understand peace and conflict, and how to possibly promote peace amongst young children. However, no research to my knowledge has addressed all three of these areas together. How may each of these areas involving peace, violence, and children influence one another? This paper will specifically address the effects of violent conflict on children and how that violence may influence the way children view and understand peace and conflict. With that knowledge, it will then lay out responses for helping children learn how to become more peaceful in their own interactions, hopefully leading to building a better, more peaceful future for all children.

**Danielle Thibodeau, Samantha Opsahl**

Sponsor: Barbara Zust, Nursing

*Board Room, Session A*

“Exploration Of Parents’ Thoughts And Beliefs Toward Vaccinating Or Not Vaccinating Their Children In The Rural Area”

Some of the diseases that once caused thousands of deaths are rarely seen anymore because people have been getting vaccinated against them. However, a growing number of parents are choosing to not vaccinate their children. Centers for Disease Control and Prevention states that if individuals are not given the protection from vaccinations, then there will be an increase in the number of people infected with these rare diseases and that it will spread very quickly. Although there is a plethora of studies that explore vaccination attitudes within the urban setting, there is a dearth of studies that explore vaccination attitudes in the rural area. Therefore, the purpose of this exploratory study is to research parents’ attitudes and reasons regarding vaccinating their children within the rural community. Following IRB approval, a convenience sample from a Midwestern rural community was invited to participate. Participants were asked to fill out a 10 question survey that included open-ended questions for narrative data and 6 items that asked participants to rate their responses on a 1-10 Likert scale. Preliminary findings indicate that, of the 63 participants, roughly 20% question the safety and necessity of vaccinations. These participants cited unnecessary government involvement and alternative methods to protect their children as reasons for not vaccinating. The significance of this study is to uncover parental reasons to vaccinate or not vaccinate their children. Findings will add to the body of knowledge that guides nursing practice regarding immunization education.

**Tia Thompson, Madison Wroge**

Sponsor: Ana Adams, Modern Languages, Literatures, and Cultures

*Three Crowns Room, Session A*

“Engaging Minority Entrepreneurship: A Partnership in Support of the Entrepreneur Doorway Project”

In partnership with La Mano’s Entrepreneurial Doorway Project (EDP), the Greater Mankato Diversity Council and the Small Business Development Center (SBDC), students in Spa 390- Spanish film class are working to increase awareness about the growing potential and opportunity behind minority entrepreneurship and the innovation by the EDP/SBDC to find solutions to the pervasive roadblocks minority entrepreneurs still face today. The Spa 390 class has produced a series of videos that, together, introduce the story of minority entrepreneurship in South Central Minnesota with the goal of providing information about services and resources but also engaging the community in discussion about the business opportunities for minority entrepreneurs. Students will share informations about the project and the partnership, as well as showcase their video work and preliminary findings.

**Bennett Thrash**

Sponsor: Anna Versluis, Geography

*Heritage Room, Session A*

“East African Immigrant Assimilation in Minnesota”

 Throughout the past decades, Minnesota has seen a rise in immigrants of nonwhite descent, particularly those from East Africa. Despite religious and racial boundaries, these immigrants have assimilated at roughly the same rate as their white forebears. This study seeks to study where these immigrants assimilate best in order to create a model of immigrant assimilation throughout Minnesota's towns and cities.

**Julia Tindell**

Sponsor: Amy Seham, Theatre & Dance

*Board Room, Session B*

“At Risk: Writing Mental Illness Into Contemporary Theatre”

What does it mean to be labeled disabled? mentally ill? crazy? Who creates sanity, nurtures normalcy, defines the typical person? When writing the one-act play At Risk these were the questions that fueled my research. In this project, I will: examine the process of researching and writing At Risk; describe the experience of letting it go into the capable hands of Junior Kaitlyn McElrath, who directed it to be performed at the Theatre Gallery fall ‘12; and reflect on the process as a whole as well as where to go from here. As with my original efforts in writing the play, I hope to inspire in viewers and readers some of the same inquiries with which I began.

**Courtney Train**

Sponsor: Mimi Gerstbauer, Peace Studies

*Board Room, Session B*

“Torture, Desire, and the Other: Prisoner Abuse”

Literature suggests prisoners of war have, for a significant time, been abused and tortured by those imprisoning them. However, different settings call for different levels of abuse. Because prisoners of war are viewed as foreigners, their abuse is justified, leaving those who do not relate to view their punishment as necessary and deserved. This presentation examines the causes behind such torture, along the search for finding peaceful resolutions to this dilemma. How do external threats, the desire for territory, and the effects of shame and guilt contribute to one's actions toward prisoners of war? What factors influence torture? Can the use of shame and guilt reduce torture in prisons? It is argued that external factors drive torture in prisons, but perhaps the use of shame and guilt can increase or decrease this torture.

**Tuan Tran, Ian Gibbs-Hall, Paul Young, Doug Fryer (United Science, LLC), Conor Smith (United Science, LLC), Jon Thompson (United Science, LLC), Bill Barber (Agilent Technologies)**

Sponsor: Dwight Stoll, Chemistry

*Board Room, Session A*

“Characterization Of Carbon-Modified Silicas For Use In Analytical Liquid Chromatography”

We have recently developed a series of novel carbon-modified porous silica materials for use in analytical and preparative separations, and as solid-phase extraction media. The analytical materials exhibit unique characteristics compared to other commercially available carbon phases and are substantially more stable at high pressures. Users of carbon-based phases are aware that some compounds are very difficult to elute from existing commercial carbon-based materials. The new materials described here significantly address this problem through both the ability to adjust the carbon loading on the underlying substrate, and the use of a relatively inert substrate. We will report on the basic characterization of a suite of materials that cover a wide range of carbon loading, including: retention of non-polar and polar compounds, chromatographic selectivity, and mass transfer characteristics.

**James Trevathan, Paul Saulnier**

Sponsor: Paul Saulnier, Physics

*Board Room, Session A*

“Characterization of Diffuse Media with Laser Speckle”

The intensity distribution of light scattered by an optically diffuse material can be used to determine the scattering properties of the material. The speckle contrast ratio is an important property which can be calculated from the statistical properties of the intensity distribution and is related to the degree of scattering in a material. We explore a method for measuring the intensity distribution and calculate the speckle contrast ratio for single as well as stratified polycarbonate membrane filters; spanning the weak to highly scattering regimes.

**Andrew Vold**

Sponsor: Mimi Gerstbauer, Peace Studies

*Board Room, Session A*

“Microcredit: Providing a Path to Freedom”

The microcredit movement in developing countries is a system in which poor, rural communities are given access to small loans that enable entrepreneurial ventures. While most humanitarian organizations in the world are focused on charity, microcredit organizations are structured as social businesses. The idea is that social businesses don’t need charity funding in order to be sustained; social businesses sustain themselves. As the poor repay their loans and dig themselves out of poverty through their own small businesses, there is a cycle of money to be lent out to new loan seekers. Through this cycle, poor people in developing countries are given access to credit

There are critics that say microcredit exploits patriarchal societies and forces the rural poor to become dependent on credit, but these drawbacks are not enough to outweigh the benefits of microcredit. The benefits of microcredit are that rural poor villages are able to work their way out of poverty as a community and are able to avoid working in highly exploitive environments such as garment factories. Microcredit leads to interdependence as opposed to alternative forms of economic development that lead to individualism and anonymity. Microcredit as an aid to development leads to peace and freedom.

**Allyson Voss**

Sponsor: Marisa Kalbermatten, Modern Languages, Literatures, and Cultures

*Board Room, Session B*

“A social, political, historical and cultural perspective on Urdu Linguistics”

Urdu, the national language of Pakistan and a language used in some northern portions of India is a unique language in its historical, political, and linguistic ties to various other languages in the region. While it is orally interchangeable with Hindi, the script is completely distinct in both the formation of letters and the direction of writing. Instead, it shares many similar traits with written Arabic and Persian. During my independent study or Urdu Linguistics, Professor Kalbermatten and myself examined what specific historical contexts including the partition of India and Pakistan and the movement of Islam through Asia caused the adaptation and establishment of such a language. I have found that this topic holds significance today because as a student of Urdu the contexts in which I use my language and the groups of people I speak with holds a bearing on whether I am accepted as a Hindi or Urdu speaker. My project displays how this language has progressed over time in a wide array of disciplines covering religion, politics, media and even art forms.

**Katelyn Warburton**

Sponsor: Lisa Rinehart, Counseling Center

*Board Room, Session A*

“Be the Light! Offering Therapeutic Light Boxes to Gustavus Adolphus Students and Faculty”

I plan to borrow one of the light boxes from the library, and use it as part of my presentation. I hope to summarize information about seasonal affective disorder and educate those who attend on the importance of mood regulation on depression, anxiety, and other components of emotional well-being.

**Breanna Wegner**

Sponsor: Mimi Gerstbauer, Peace Studies

*Board Room, Session B*

“Peace Keeping Bodies Through the Years”

The Peace Corp was started by John F. Kennedy in 1961 and its purpose is as follows:
 To promote world peace and friendship through a Peace Corps, which shall make available to interested countries and areas men and women of the United States qualified for service abroad and willing to serve, under conditions of hardship if necessary, to help the peoples of such countries and areas in meeting their needs for trained manpower.
 The effectiveness of such an organization, among other peace keeping bodies, is not easily determined. Due to outside factors such as government involvement, culture, and the presence of other peace keeping bodies, it is difficult, at best, to measure how an organization such as the Peace Corps has affected the population and culture of a certain area.
 This essay will look at different factors that assess the effectiveness of peace keeping bodies.

**Brian White**

Sponsor: Anna Versluis, Geography

*Board Room, Session A*

“Declining Detroit: The impact that Casino's have on City's growth and Quality of Life”

Many cities in the US have been challenged with economic problems. Factors like urban decay, declination in population, and lack of jobs in the Detroit area has lead the region to economic failure. The city was searching for ways to create jobs and revenue to better the economic crisis in which they were in. The development of Casino's were seen to be the answer. The purpose of this study is to obtain a better understanding of the casino's impact on the growth of the city through infrastructure, population, revenue, as well as the quality of the peoples lives. Through comparing interviews of people from the area and using a propensity test I will be able to have a better grasp on quality of life in the post casino development era.

**Greg Wiessner**

Sponsor: Judy Douglas, Peer Education & Chemical Health

*Board Room, Session B*

“Be U: A Comprehensive Wellbeing Assessment”

"Be U: Gusties for Wellbeing" is part of a larger campus-wide wellbeing initiative led by Dr. Stephen Bennett, in collaboration with Karen Lawson, M.D. and Becky Gorman, P.A. from the University of Minnesota’s Center for Spirituality and Healing, as well as Judy Douglas, director of the office of Peer Education and Chemical Health. The idea behind this program is to offer students support in the development of their self-awareness and wellness practices. Through meeting on a weekly basis with a group that consists of one or two facilitators and four other students, each individual learns strategies which lead towards greater wellbeing, while simultaneously acting as coaches to their peers. Participants gain emotional intelligence, empathy, powerful communication skills, and an understanding of how to change behaviors. During the summer of 2012, I devised a supplementary assessment for the program that enables each participant to reflect on his or her own levels of wellbeing among nine distinct dimensions.

**Sydnie Wigand**

Sponsor: Mimi Gerstbauer, Peace Studies

*Board Room, Session A*

“Re-evaluating Just War Theory To Apply It To The Twenty-First Century”

Just war theory has been utilized time and time again to determine whether or not a war should be entered into and whether or not conduct is appropriate during a war. The theory was developed long ago in a time when leaders fought alongside the soldiers and battles were much removed from civilian living. In today's society, however, civilians are often caught in between battles and leaders only delegate from capital cities. Based on extreme changes that have occurred since the time that these moral codes were developed, it is essential to reevaluate the principles of jus ad bello and jus in bellum and how they can be made more applicable to war as it is carried out today. Some of the principles in question include legitimate authority and discrimination within war. The new age of nuclear technology also calls into question the principle of proportionality during battles and advancements in peace research and methodology make war as a last resort much less likely to be justifiable. Based on this knowledge, just war theory as it is currently defined would makie any war waged today unjust and it must be redesigned to be used as a moral standard once again.

**Amanda Wood**

Sponsor: Eric Dugdale, Classics

*Board Room, Session B*

“Gender Performance in Aeschylus’ Tragedies and the Effects on Chorus-Character Interactions”

This thesis examines the relationship between the chorus and characters in Aeschylus’ tragedies. It primarily focuses on the gender dynamics between the chorus and the main characters. How do gender dynamics affect their interactions? Specifically, how do the genders of the chorus and the characters affect not only their relationship, but also their actions made with regard to one another? There has not been much work done by scholars that engage the original text, so much of my research will focus on Aeschylus’ tragedies themselves and their choral episodes. I will be looking at all seven of Aeschylus’ extant tragedies; Seven Against Thebes, The Suppliants, Agamemnon, The Libation Bearers, Eumenides, The Persians and Prometheus Bound. This paper will consider the choral themes and setups present in Aeschylus’ larger body of tragedies in order to provide a more complete analysis on the role of the chorus, as well as the relationship dynamics between the chorus and the tragedy’s protagonists. Included is a brief examination of the position of the chorus in ancient Greek tragedies as a whole, through which I can examine Aeschylus’ tragedies in a larger context. I will then examine the relationship dynamics between the chorus and the tragedy’s protagonists. My paper considers the impact of gender on the interactions between the chorus and the characters of Aeschylus’ tragedies, because tragedies provided the means through which ancient Greece could safely and intensely test gender dynamics.

**Blia Xiong**

Sponsor: Mimi Gerstbauer, Peace Studies

*Board Room, Session A*

“Gender Violence in the Military ”

Subsequently after women's participation in the military, the number of gender violence increased over the years. Many female soldiers who are in the military have been a victim of sexual violence and refused to speak up because their military career would be terminated. This paper will focus on the gender violence in the military and explore the different precautions that are needed to stop gender violence. A few examples of precautions could involve protection by the military, check and balances to make sure there’s no oppression and increase education and support.

**Kheng Xiong**

Sponsor: Mimi Gerstbauer, Peace Studies

*Board Room, Session B*

“China's Military In The 21st Century”

Over the years China has become more economically successful. Their economy is now 2nd behind the United States. With great economic success it could lead to more money being spent on the military. China is currently 2nd behind the United States on military spending. They are currently investing more into their military power such as battleships, war planes, aircrafts, etc. China is planning to use its military to capture land that they thought was originally theirs and to defend themselves. A great example is Taiwan. Another example are these disputed islands known currently as the Senkaku Islands. Currently China, Japan, Korea, and other Southeastern Asian countries are trying to acquire the Senkaku Islands, which is fill with great resources. Now there are navies from China and Japan patrolling around the island. This research paper will examine if China plans to use its military to conquer more territory or for self-defense.

**Danielle Yaste**

Sponsor: Mimi Gerstbauer, Peace Studies

*Board Room, Session A*

“Faith Based Organizations: Are They Effective?”

There are numerous organizations that work to bring a greater level of social justice in the world. Many of these organizations are Faith Based Organizations. Some Sociologists and Peace Studies specialists argue that Faith Based Organizations are more effective than other Social Justice Organizations. This paper will look specifically at the effectiveness of Faith Based Social Justice particularly in Urban Areas. Faith Based Organizations are organizations that are based on moral beliefs that are derived from a religious structure and are typically driven by a desire for people to live out their beliefs. Therefore religiously driven morals will be compared to secular or non-religious driven organizations. Because of religious “motives” these organizations can be argued to be more effective versus people who are driven by motives sitting at the surface level of social justice. In order to develop a deeper understanding, this paper will look in detail at two organizations as examples of Faith Based Organizations: Urban Homeworks, “Rebuilding Neighborhoods. Reconnecting People. Reclaiming Hope.” and EFCA Crisis Response, an offspring of EFCA Touchglobal “Mobilizing people, equipping churches, transforming communities.”

**Brian Zabel**

Sponsor: Ryan Bergstrom, Geography

*Board Room, Session B*

“Spatial Analysis of Viable Locations for Future Construction of Cabela’s Retail Stores ”

I will be presenting research completed during the fall semester of 2012 for Geography 240 - Geographic Information Systems. As students we were to pick a specific problem or subject matter that truly interested us and examine it using geographic information systems (GIS) and the knowledge we had gained throughout the course. Having a strong background in the outdoors from years of hunting and fishing, designing a project that could relate to those specific interests was my goal. I also wanted a project design that could relate to future GIS work in a career setting. From those parameters I settled on a project that would analyze the best possible locations for a future retail store, as if I was hired by a company to assist them in expanding their network and increasing sales. The company I chose to analyze future retail store locations for was Cabela’s, as I have been a lifelong purchaser and user of their products throughout my experiences in hunting, fishing, and the outdoors. I selected Minnesota as my area of study as Minnesotan sportsmen spend the 5th highest amount of all other states on outdoor activities with 4.3 billion dollars a year, making expansion in the state a natural fit for Cabela’s to outfit the passionate outdoorsmen. Using GIS procedures and data from the Minnesota Department of Natural Resources, I was able to construct a final map containing nine ideal locations for expansion of the company.