Undergraduate Research Conference

Minnesota State University
Mankato

Welcome!

The Third Annual Undergraduate Research Conference recognizes and celebrates undergraduate research and creative activities at Minnesota State University, Mankato. Our faculty are committed to undergraduate research and organizing this conference has revealed both the long and productive record of undergraduate research on campus and the many benefits that occur as the result of faculty mentoring undergraduate students. Students involved in these efforts have better retention rates, excel academically and are more competitive in the job market and graduate school admissions. This formal publication presents the abstracts of the student presentations on April 3, 2001. The conference features 37 oral and performance based/visual arts presentations, and 21 poster presentations from seven campus colleges. Our congratulations to the students and their faculty members.

Richard R. Rush
President
Minnesota State University, Mankato

THE AFFECTS OF COMPETITION ON PERSONS WITH SYMPTOMS OF SOCIAL PHOBIA.

Brenda Bruss (Psychology)
Barry Ries, Faculty Mentor (Psychology)

Over the past ten years, the number of studies on social phobia has increased greatly. It is an established fact that individuals who have social phobia have a tendency to be concerned with others' evaluations of them. It has also been learned that individuals with social phobia avoid interaction with others whenever possible.

The purpose of this study is to investigate the affects of competition, via a video game, on students who report high symptoms of social phobia versus students who report little or no signs of social phobia. This examination will investigate the affects of competition against another individual versus the affects of playing the game alone.

It is predicted that individuals with symptoms of social phobia will report more anxiety and higher fear of negative evaluation following the competition condition.

PSYCHOMETRIC PROPERTIES OF THE GLOBAL LEISURE SATISFACTION SCALE.

Crystal Chalich (Recreation, Parks, and Leisure Services)
Jim Wise, Faculty Mentor (Recreation, Parks, and Leisure Services)

The purpose of this study is to examine the reliability and validity characteristics of the Global Leisure Satisfaction scale. The Global Leisure Satisfaction scale and the Leisure Satisfaction Scale, a proven valid and reliable instrument, will be administered to Mankato area citizens with disabilities.

It is anticipated that a strong positive correlation between scale scores will result. In addition, a Cronbach's alpha value will be generated to determine the internal consistency of the Global Leisure Satisfaction scale.

The development of a psychometrically sound and brief leisure satisfaction scale is important because researchers have proposed that programs should be developed to satisfy leisure needs.

VASCULAR DYSFUNCTION IN RATS WITH DIET-INDUCED HYPERHOMOCYSTEINEMIA: A LOOK AT HYPERTENSION.

T. Dalberg (Chemistry and Human Biology)
Penny Knoblich, Faculty Mentor (Biology)
James Rife, Faculty Mentor (Biology)

Elevation of plasma homocysteine levels is associated with stroke, peripheral vascular disease, myocardial infarction, and arteriosclerosis. The activation of DNA synthesis in vascular smooth muscle cells, combined with activation of coagulants and inactivation of anticoagulants and the ultimate production of free radicals in the blood, proposes several mechanisms for the atherosclerotic symptoms. Patients (n=357) with a C677->T mutation, resulting in a Val substitution for an Ala, in the methylenetetrahydrofolate enzyme involved in methionine metabolism show a decrease in hypertension when carrying the homozygous valine genotype. Ischemic stroke Patients (n=125) with and without hyperhomocysteinemia were tested for hypertension. Of the patients with hyperhomocysteinemia, 89% were reported to have hypertension. Based on previous studies we hypothesize that as homocysteine levels increase in rats, atherosclerotic-like conditions will follow, leading to increase plaque build-up and decreased elasticity, resulting in hypertension. Blood pressure will be measured by the tail-cuff method beginning at five weeks of age. Rats were mated randomly within their own breed, and will be placed on a homocysteine diet or a normal diet after weaning. Preliminary testing on the stability of homocysteine in water will be carried out prior to weaning.

THE AFFECTS OF GLUCOSE ON MEMORY TASKS IN YOUNG ADULTS.

Jennifer Grant (Psychology)
Phillip Goernert, Faculty Mentor (Psychology)
Barry Ries, Faculty Mentor (Psychology)

Recent findings indicate enhancing affects of glucose on memory in animals and elderly adults. This experiment examined the affects of glucose on memory in young adults.

Forty-one undergraduates at Minnesota State University, Mankato were presented visual picture stimuli and administered three free-recall tests after consuming glucose (50 g) or saccharin-sweetened, lemon-flavored beverage.

Performance by participants was equivalent in the glucose and saccharin conditions. Regardless of condition, a significant hypermnesic affect was found with an increase in recall of picture names across subsequent tests.

This research suggests that glucose does not play an enhancing role in the memory of young adults.

EXPLORING LITERATURE FROM THE SPANISH-SPEAKING WORLD.

Hannah Hackett (Spanish)
James Grabowska, Faculty Mentor (Modern Languages)

I am going to create a multimedia document, which demonstrates how I interpret a literary work (poem or short story) from the Spanish-speaking world. The project will involve selecting and reading a work, researching its author, and investigating the cultural and historical shaping of that literary piece. I will gather/create materials to convey the basic meaning of the poem, yet will reflect my unique perspective on how the piece can be understood.

The multimedia project encompasses such *languages* as music, drawings, film, and sound affects, in addition to spoken and written Spanish. The availability of these additional *languages* will give me multiple options with which to express my thoughts. It will also increase the probability that my ideas will be successfully transmitted to a diverse audience, potentially including children, adults, classmates, educators, and future employers.

The project allows the freedom and responsibility to direct oneself in the processes of interpreting, investigating, and choosing creative ways to compile the selected media. The project also presents the opportunity to learn how digital technologies can be used to achieve a desired result.

SOCIAL LOAFING AS AFFECTED BY GENDER.

Tawiila Hafidh (Psychology)
Barry Ries, Faculty Mentor (Psychology)

For decades, social psychologists have been studying the affects of group membership on individual performance (Allport 1925; Dashiell 1930; Triplett 1898; Zajonc 1965). There is a tendency for persons to exert less individual effort when they are working as a group to attain a common goal than they would if working alone to attain the goal. This phenomenon is called social loafing (Latane, Williams, & Harkins, 1979).

Substantial research conducted in the West indicates that gender may affect the outcome and that women social loaf less than men. In this study, forty male and forty female participants will complete a number/symbol substitution grid.

It is hypothesized that participants will complete the task more quickly when working as individuals than they will while working as parts of randomly structured teams. It is also anticipated that there will be further differences in individual and group performances when the task is analyzed according to gender. In this study, it is hypothesized that females will social loaf less than males.

COMPARISON OF LIPOXYGENASE ISOENZYMES FOUND IN SPECIFIC SOYBEAN TISSUES.

Jarod Hanson (Biochemistry)
Terry Salerno, Faculty Mentor (Biochemistry)

The purpose of this project was to identify and quantitate the various lipoxygenase (LOX) isoenzymes present in specific soybean tissues. Different varieties of soybeans lacking specific seed lipoxygenase isoenzymes were tested to compare differences in LOX enzymes present in the soybean vegetative tissues.

The lipoxygenase isoenzymes were isolated using an electrophoretic technique called isoelectric focusing to separate the isoenzymes by their charges. A specific activity stain was used to identify and quantify the LOX isoenzymes present. The lipoxygenase species present were identified according to their isoelectric points and quantified using a densitometer.

This study has shown several key differences among the lipoxygenase species present in the root, stem, and leaf tissues as well as differences in the amount and type of LOX isoenzymes expressed in the control and null seed varieties. Thus, it appears that lipoxygenase expression in the vegetative form is dependent on many factors, including the seed lipoxygenase genes present.

AN ANALYSIS OF ANCIENT GREEK DRAMA AS A TRANSCENDENTAL DANCE-DRAMA.

John Carl Heimbuch (Theatre and Dance)
Julie Kerr-Berry, Faculty Mentor (Theatre and Dance)

The purpose of this project is to analyze the elements of Ancient Greek Drama to see if they qualify in the categories of traditional Dance-Dramas, especially in the Mediterranean and Southern Asia. Analysis will compare all aspects of the dramatic forms with diverse comparisons drawn.

The first intention is to provide a cohesive definition of Dance-Drama as compared to literary dramatic forms. The second intention is to examine the role of Trance within Dance-Drama. After firmly establishing these intentions, an examination of Ancient Greek Drama can occur within the defined perimeters.

The ultimate goal of this project is to bring greater awareness to traditional dramatic forms and to assert that the origins of theatre cannot be traced to one geographic region, but instead arose gradually from the rituals of many different cultures.

RELATIONSHIP BETWEEN LEISURE SATISFACTION AND MENTAL HEALTH.

Melissa Kalm (Recreation, Parks, and Leisure Services)
Jim Wise, Faculty Mentor (Recreation, Parks, and Leisure Services)

The purpose of this study is to examine the relationship between leisure satisfaction and mental health. Data will be collected from surveys administered to college students pursuing health related degrees.

Based upon previous research, we expect a strong positive correlation between leisure satisfaction and mental health. Knowledge of the relationship holds potentially important implications for professionals in therapeutic recreation. A strong relationship would support the role of leisure as a contributor to mental health.

With this knowledge, therapeutic recreation specialists can develop leisure programs designed to improve people's quality of life.

AFFECTS OF GAME CONDITIONING ON ANAEROBIC POWER AND BLOOD LACTATE ACCUMULATION IN FEMALE ATHLETES.

Megan Kelly (Exercise Science)
Mandy Krause (Physical Education)
James Mullenix (Physical Education)
Mary Visser, Faculty Mentor (Human Performance)
Jeff Gilbert, Mentor (Human Performance)

The purpose of this project is to evaluate the affect of minutes of game time played on select fitness parameters with a Division II Women's Basketball team. We hypothesize there will be a measurable training affect induced by playing time over the course of the season.

Data to be collected includes lower-body anaerobic power, body-fat percentage, and blood lactate accumulation. Lower-body anaerobic power will be assessed using a 30-second Wingate test. Blood lactate accumulation will be determined with whole blood samples using an enzymatic and reflectance photometry method. Changes in body-fat percentage will be assessed using a three-site skinfold method.

Each athlete will be tested preseason, midseason, and postseason. Data analysis will be done using repeated measures ANOVA with the level of significance set at the 0.05 level. Data obtained from this study may be useful in determining conditioning programs for team sports, where many players are not exposed to the rigors of regular competition, yet are expected to be fit enough to play at a moments' notice.

ACADEMIC DISHONESTY AS A FUNCTION OF INDIVIDUAL CHARACTERISTICS.

Heidi Leaman (Psychology)
Barry Ries, Faculty Mentor (Psychology).

Academic dishonesty among students within the university system has long been recognized as a social problem. High academic performance is one of the most sought-after characteristics of college students. However, the distinction of great academic achievement has led numerous college students to engage in dishonest behaviors.

Increasing moral and ethical concerns emerge as more and more students admit to having cheated. An experimental word-forming task with questionnaires can be used to analyze individual characteristics such as gender, attitudes toward cheating, and behaviors in competitive situations on academic dishonesty.

It is anticipated that more men than women will engage in cheating behavior. The researchers also expect to find that competitive situations elicit increased incidents of cheating behavior when compared to noncompetitive situations.

Furthermore, it is expected that tolerant attitudes toward cheating among men and women will be associated with academic dishonesty. The results of this study are intended to identify the individual characteristics that predict academic dishonesty.

CHRISTIAN SACRED DANCE.

Megan Lockey (Social Work)
Julie Kerr-Berry, Faculty Mentor (Theatre and Dance)

I have been researching the topic of Christianity in dance through the Minnesota State University, Mankato dance minor program. Fall semester I researched the topic of Christianity and dance and wrote a paper discussing different areas of my interest in the topic. Such areas include the definition of Christian Sacred Dance, the history of Christianity in dance, symbolism used in Christianity that is also evident in dance, and Christian Biblical references to dance.

During the spring semester, I am planning to continue my research by choreographing and participating in a Christian Sacred Dance. This piece of choreography will be an example of praise dance and will be performed by three female dancers, including myself. At this time, the music and exact title are undecided.

During the presentation, I will discuss my research in the paper then perform the choreography, still a work in progress, with two other dancers.

ART AS A BUSINESS: THE FEASIBILITY OF A NONPROFIT PERFORMING ARTS START-UP IN MINNESOTA.

Angela Mickelson (Management and Theatre and Dance)
Brenda Flannery, Faculty Mentor (Theatre and Dance)

How does one combine a dedication to advancing the arts with running an efficient and cohesive business? Imbedded in the formation of a dance/theatre touring company, the feasibility of a nonprofit arts start-up in Minnesota was explored. Through extensive Internet research and contacts in the arts industry, a base of knowledge was compiled to understand the complexities of a start-up.

The managerial concepts of strategy and the analyses of personnel, financial issues, and competition were applied to the nonprofit arts framework. Although basic in its premise, these functional areas of business are not fully developed in most arts organizations. A wealth of resources is available for management and artistic visionaries to update their knowledge. However, the foundation of arts management for most has never been constructed. With funding of nonprofits continually under scrutiny, niche and concrete goals are necessary to the economic stabilization of the organization.

The findings indicate that dance and theatre can bridge the surfacing technological gap by creating interactive forums for expression.

USABILITY TESTNG: IMPACTS ON WEB DESIGN.

Patrick Morrow (Technical Communication)
Roland Nord, Faculty Mentor (English)

Students from the Data Communications and Networks II (COMS 463) and Technical Documentation, Policies, and Procedures (ENG 4/577) developed a web site for the First Year Experience General Education Requirements. Early in the development cycle, usability testing was conducted to determine how usable the web site would be to the potential users.

The method of testing consisted of a questionnaire and paper prototypes of the web pages. The test was conducted in three First Year Experience Seminars (FYEX 100) and in the Technical Documentation, Policies, and Procedures class.

The testing revealed major navigational problems with the web site and numerous contextual errors that confused the users. The usability testing prompted the team to identify problems that otherwise would have been overlooked. The team revamped both the layout and the content structure of the website.

EXPANDING CONCEPTS OF RITES OF PASSAGE.

Hilary Mueller (Psychology)
Julie Kerr-Berry, Faculty Mentor (Theatre and Dance)

In my studies, I discovered that we attach different meanings to the concept *rite of passage.* I researched marriage cross-culturally as a traditional rite of passage in my World Dance in Cultural Perspectives class. This project sparked an idea that perhaps this *traditional* perspective of a rite of passage was a bit outdated and could be more inclusive.

In my presentation, I would like to explore a new definition for the phrase, *rite of passage.* I would like to look at the traditional rite of marriage as well as include two additional rites, namely, the healing process and the ability to adapt new perspectives. In an ever-changing global society, it is time to start redefining some of our traditional ideas.

My presentation consists of an oral construct that describes traditional rites of passage as well as those that expand the concept. A video collage will demonstrate the examples I use in order to emphasize the concept that we need to reexamine traditional points of view.

THE AFFECTS OF TREADMILL INCLINATION ON BLOOD LACTATE ACCUMULATION AT STEADY STATE WORKLOADS.

James Mullenix (Exercise Science)
Mary Visser, Faculty Mentor (Human Performance)
Jeff Gilbert, Mentor (Human Performance)

The intent of this project is to assess the levels of blood lactate accumulation (BLa) at different steady state submaximal workloads. We hypothesize that BLa is more strongly associated with changes in muscle fiber recruitment and the associated mass action affect than with hypoxia of local tissues.

Pilot data indicates that BLa is independent of oxygen demand. Approximately ten, trained, college- aged male and female subjects have been recruited for this investigation. Subjects will perform two submaximal workloads on two separate days, which will be individualized to elicit steady state workloads approximately equal to 50 to 55% of their maximal oxygen consumption. The two workloads will vary in percent grade (from 1% to 10%). Velocity will be adjusted to elicit the same fraction of the subject's maximal oxygen uptake.

Subjects will maintain each workload a minimum of fifteen minutes to ensure a steady state workload is achieved and BLa values are stabilized. Blood lactate will be measured using an Accusport whole blood analyzer. Data will be analyzed with a dependent *t*-Test at the 0.05 level of significance.

REFUGEE AND IMMIGRANT TRANSITION FROM THE FEMALE PERSPECTIVE.

Rachel Noah (Anthropology)
Winifred Mitchell, Faculty Mentor (Anthropology)

The experience of immigrating to the United States is one that is full of challenges and frustrations. That experience can be especially difficult if one is also a refugee. This paper will share and explore the experiences of immigrant and refugee women and their transition to American life and culture.

There are several local populations of refugees in the Mankato area, and these populations are growing larger all the time. The information shared will be gathered from interviews with local Somali women. The interviews include such information as the telling of their experiences during the immigration process, and how these experiences affected them in their respective stage of life (daughter, mother, wife, grandmother, etc).

The interviews also explore how the refugee experience shaped the women's expectations of themselves, and how they adapted with their traditional cultural values to their new circumstances.

FROM FAIRY TALE TO BALLET, "THE SLEEPING BEAUTY."

Julie Robbins (Interior Design)
Julie Kerr-Berry, Faculty Mentor (Theatre and Dance)

In my presentation, I will be discussing the origin and other background information about the fairy tale and the ballet, "The Sleeping Beauty." First, I will compare the written version and the performance version. Second, I will examine the culture context within each; the ballet that was created by Petipa in the late 1800s, as well as other components. For example, I will look at the interrelationship between the spiritual and physical implications of the dancing body as revealed through ballet. A video clip of Petipa's "Sleeping Beauty" will be used to illustrate my findings. Third, and closely related to my second objective, I will examine the secular and sacred aspects of the ballet.

Through live performance, I will conclude with two short dance phrases. One phrase will demonstrate the "up" in ballet. The other will demonstrate the "down" in modern dance. Ballet, although a secular art form, mirrors the Christian religious principle of ascension through upwardness. The later, modern, or contemporary dance mirrors the more primal origins or non-Christian roots through its downwardness.

TEMPORAL AND SPATIAL PATTERNS OF BAT MORTALITY CAUSED BY WIND-ENERGY TURBINES IN SOUTHWESTERN MINNESOTA.

Rebecca Rosendahl (Biology)
John Krenz, Faculty Mentor (Biology)
Brock McMilla, Faculty Mentor (Biology)

Renewable energy resources such as wind and solar are becoming increasingly popular because of the ongoing depletion of oil reserves and the negative effects of burning fossil fuels. However, previous studies of birds, and possibly bats, have demonstrated that wind-energy turbines may negatively affect organisms that fly.

We hypothesized that the species composition and seasonal timing of bats killed by wind-turbines would be similar to previous years. We searched for bat carcasses below wind turbines at sites along Buffalo Ridge in southwestern Minnesota during July through October 2000. We found 72 fatalities comprising four species of bats during biweekly searches at a sub-sample of 69 turbines.

Based on the number of fatalities observed, we estimated that total mortality at the site was 528 bats, which was similar to previous years. There were no significant differences in species composition or seasonal timing of bat fatalities. Although mortality seemed high, there was no evidence that wind-energy development was negatively affecting the bat populations in southwestern Minnesota.

MSU STUDENTS' USE OF THE MSU WEB SITE.

Kristin Ruder (English)
Roland Nord, Faculty Mentor (English)

As part of ongoing usability studies of the MSU Web site, survey and usability test data has been collected from convenience samples of MSU students: 1) new entering students enrolled in First Year Experience (FYEX 100) or Composition (Eng 101) courses, and 2) undergraduate students enrolled in Technical Communication (Eng 271) courses.

The survey asked students to provide demographic information, to self-assess their Internet expertise and their success using the MSU Web site, and to report their use of specific sites within the MSU Web site. Usability testing provided a second measure of student success in using the MSU Web site.

The results have implications for the design and development of the MSU Web site and for campus communication.

THE AFFECTS OF BACKGROUND MUSIC ON WORD RECALL.

Tasha Schmidt (Psychology)
Barry Ries, Faculty Mentor (Psychology)

Numerous researchers have studied how much the environment affects performance. This study is designed to test how background music affects performance on a word recall test.

Undergraduate psychology students will be required to study and then take a word recall test. Participants will be randomly assigned to either a no-music group, a group in which they will listen to music that they rate as pleasant, or another group that will listen to music they rate as unpleasant. Participants in the latter two conditions will be invited back for a second session to be tested on a delayed word recall test. At that time, they will either listen to music they heard during the previous session, or they will not listen to music while taking the second test.

It is anticipated that participants in the no-music condition will do better on the word recall test than the music conditions. Furthermore, it is anticipated that participants in the group that listens to pleasant music during the second trial will do better than participants who do not have background music.

DATA MINING AND STATISTICS: A COMPARISON OF DATA ANALYSIS TECHNIQUES.

Christina Sedlack (Computer Information Sciences)
Ann Quade, Faculty Mentor (Computer Information Sciences)

Data mining offers researchers a methodology to sort through large quantities of data to identify patterns, trends, relationships, and information. I shall present an in depth analysis of a data set using the data mining process and contrast the results to a traditional statistical analysis of the same data set.

Data for the data set was obtained from over 200 students who were enrolled last fall semester in the first three courses required for the computer science major. I will be examining the similarities and the differences between men and women in computer-related attitudes and self-efficacy (confidence) towards pursuing a degree in computer science.

AFFECT OF CONSONANT TYPE ON LARYNGEAL BEHAVIOR.

Allyson Segar (Communication Disorders)
Karen Fatka (Communication Disorders)
Bruce Poburka, Faculty Mentor (Communication Disorders)

A common type of voice disorder is caused by the presence of excessive tension in the larynx during speech. Previous research from the field of speech science has shown that production of various vowels has a differential affect on laryngeal tension.

To further understand the interrelationship between articulation and voice production, it may be useful to determine whether laryngeal behavior is also affected by consonants. Using electrophysiologic and aerodynamic measurements, this study examined the affect of various consonant productions on laryngeal behavior when the vowel was held constant.

The findings may have clinical implications for developing a hierarchy of therapy stimulus materials and choice of therapeutic techniques such as using light articulatory contacts.

MANUFACTURE AND IMPORTANCE OF THE BOW AND ARROW AS DESCRIBED BY WOLF CHIEF OF THE HIDASTA.

Damian Woelfel (Anthropology)
Mike Scullin, Faculty Mentor (Anthropology)

Experimental archeology is a relatively new and exciting branch of anthropology. It has also become a very helpful tool for better understanding primitive technology. If we can understand any aspect of a culture's technology, it brings us closer to understanding the people who used or created it. The acquisition of the bow and arrow was a very important technological step for the Hidatsa people of North Dakota. It had a number of cultural and practical roles.

Through a previously unpublished body of anthropological data collected by Gilbert Livingston Wilson in 1911, we are given a chance to learn how the Hidatsa manufactured a number of different bows, and the importance each of these played in Hidatsa culture.

Born in 1849, a man named Wolf Chief became both friend and informant to Wilson, and it is through his recollections of his Hidatsa heritage that we can learn (among many other important things) the role that the bow and arrow played, and how it was made.

REMOVAL OF THE BY-PRODUCT TRIBUTYLTIN CHLORIDE FROM REACTION MIXTURES.

Luis Yanez (Chemistry)
Jarrod Hunson (Chemistry)
Brian Groh, Faculty Mentor (Chemistry and Geology)

Tributyltin chloride $(C_4H_9)_3SnCl$ is a troublesome by-product formed in many reactions and is difficult to remove. Current laboratory techniques for the removal of tributyltin chloride from organic by-products are either ineffective or costly. This project's objective is to develop an efficient and cost-effective method to remove tributyltin chloride from organic reaction mixtures. We studied the affects of a variety of fluoride ion sources (KF, KHF_2, NH_4F) and reaction solvents (hexane, ether and tetrahydrofuran) in the presence or absence of sodium bicarbonate Results indicate that treatment of the reaction mixture with potassium fluoride in the presence of sodium bicarbonate and a nonpolar solvent is the best method. This process converts $(C_4H_9)_3SnCl$, a liquid, into $(C_4H_9)_3SnF$, a solid, which may be removed by simple filtration.

$$PhCOCH_2CH_3 + (C_4H_9)_3SnCl + F^- \rightarrow (C_4H_9)_3SnF + Cl^- + PhCOCH_2CH_3$$

The recovered precipitate, Bu_3SnF, may easily be transformed into $(C_4H_9)_3SnCl$, a useful starting material, rather than be discarded as a hazardous waste. This recycling process for the removal of tributyltin chloride by-products may have research and industrial scale applications.

TREADING LIGHTLY: MINNESOTA STATE UNIVERSITY'S ENTRY IN THE 2001 CLEAN SNOWMOBILE CHALLENGE.

Aaron Wolff (Automotive Engineering Technology)
Kirk Ready, Faculty Mentor (Automotive Engineering Technology)

In response to increasing concern over the use of snowmobiles in environmentally sensitive areas, the National Park Service has begun a phase-out of snowmobiles in all national parks beginning this season. The impact of this decision has affected both snowmobile manufacturers and consumers.

What can be done in order to create a reasonable solution to this problem? By creating snowmobiles that are low in air and noise pollution as well as cost-effective for both private individuals and outfitters, several universities across North America involved in the 2001 Clean Snowmobile Challenge have responded with new and innovative solutions to this growing problem.

GETTING A "FEEL" FOR POETRY FROM THE SPANISH-SPEAKING WORLD.

Shannon McArdle (Spanish)
Kimberly Contag, Faculty Mentor (Modern Languages)

To get a "feel" for poetry from the Spanish-speaking world, I am going to create multimedia documents that demonstrate how I interpret Spanish poetry. The purpose of my project is to read, research, and construct a creative and interesting multimedia document that shows how I interpret the reading. I will tell you about the author, her life, her culture, and her language in the poem that I selected. I will take the experiences of the author and visually display them in hopes of sharing her knowledge and understanding of life and love. My presentation will include an interactive multimedia document that demonstrates my experiences with poetry through different media. The multimedia project embraces "languages" such as music, pictures, and sound affects, in addition to spoken and written Spanish, and allows me to express my understanding of what I have read in a more comprehensive way. My objective is to be able to share the information I have gathered, learned, and interpreted with a larger audience of classmates, peers, future employers, friends, and family. I will demonstrate "ownership" of my learning by showing how I used digital technologies, conducted research, read and under-stood literature in a second language, and made appropriate choices in content, media, and artistic expression, which I worked on as an individual.

INCREASING RETENTION FOR THOSE WHO WORK WITH THE DEVELOPMENTALLY DISABLED.

Jennifer Marcus (Speech Communication)
Lisa Perry, Faculty Mentor (Speech Communication)

Recently, the media reported on the shortage of heath care workers. One reason for this is the high turnover rate due in part to lack of training. The purpose of this study is to determine the best course of communication skills training for those who work with the developmentally disabled.

I will determine current training methods, then evaluate these methods using suggestions evaluated by Sullivan in her 1997 thesis, "Communication between residents and staff members in a retirement community setting." Finally, I will develop a course proposal for communication skills training.

Providing workers with the skills to interact with the mentally handicapped will not only alleviate the shortage of health care workers but also improve the quality of life for the mentally disabled.

WEB DEVELOPMENT FOR ELECTRONIC PUBLICATIONS.

Steve Gage (Computer Engineering Technology)
Nathan Graham (Geography)
Dave Pagel (Computer Information Sciences)
Kathleen Hurley, Faculty Mentor (English)

The Internet has proved to be a vital tool for communicating in the Information Age. Our primary question is: How can we better develop our existing web site, an electronic newsletter for technical communicators, which we began developing in the fall of 2001?

We intend to do usability testing on our current site, and with that information, research the different qualities and capabilities of two new visual html editor programs. The two programs are Dreamweaver (version 3.0), and Coffee Cup (version 8.7).

This project is currently in progress. We anticipate finding an optimal visual html editor that can be used to publish the electronic newsletter, *Techniques*. Overall, the best-case scenario would be finding a program to assist us in smoothly updating our newsletter web pages. It is equally important to find a program that allows future students to keep up with technology trends.

DEFENSIVE DISDAIN.

Kelly Coumbe (Psychology)
Barry Ries, Faculty Mentor (Psychology)
Daniel Sachau, Mentor (Psychology)

A uniformly positive person is perceived as more likable than a uniformly negative person. When people talk about what they do not like, others may think their own tastes about the topic being discussed are better. When people express a likeness for something, their tastes appear fixed. In addition, they have a better chance of being evaluated positively. Because of this, we hypothesize people with disdainful personalities use their negative attitudes to their advantages in social situations.

Undergraduate students (N=100) will be asked to complete a questionnaire about their general attitudes. They will also be asked to review a questionnaire that appears to be filled out by either a uniformly positive, uniformly neutral, or uniformly negative target. They will then be asked to answer questions that will help judge the targets' tastes, the participants' certainty of the targets' tastes, and the general likeability of the target.

We hypothesize participants will find the uniformly positive target to be the most likable. The uniformly negative target will appear to have better tastes than the others, but participants will be less certain of their tastes.

PRELIMINARY ASSESSMENT OF PHOSPHATE CONTRIBUTIONS TO MILLS LAKE, MINNESOTA, FROM AGRICULTURAL TILE SYSTEMS.

Ole Olmanson (Earth Science)
Bryce Hoppie, Faculty Mentor (Geography)

Phosphate levels in area lakes are a major problem. Excessive phosphate leads to eutrification and significant loss of water quality. This project addresses the issue of phosphate transport from field tile systems into area lakes. Are these systems significant sources of phosphate into area lakes?

Over fifty samples were collected from the test site between the tile outlet and Mills Lake, Minnesota. Additional samples were taken from an area near the lake but away from the tile outlet. These samples were analyzed for total phosphate, percent of organic matter, and grain size. Preliminary results showed excess total phosphate in most surface samples between the tile outlet and the lake. Most samples exhibited coarse soil textures and possessed generally low organic matter content. Thus the phosphate may exist in mobile forms and may be moving through the field tile system into the lake.

A RHETORICAL ANALYSIS OF THE "RETHINKING AIDs" WEBSITE.

Jennifer Dettmann (Speech Communication)
Daniel Cronn-Mills, Faculty Mentor (Speech Communication)

A group of scientists known as the Group for Scientific Reappraisal of the HIV-AIDS hypothesis created a web site titled, "Rethinking AIDS." The group behind the web site argues that AIDS is not a sexually transmitted disease. They even question the existence of the virus entity.

My analysis is driven by the critical question: Does the web site construct a reality that affectively alters our perception of HIV-AIDS? In order to answer this question, Goodnight and Poulakos' 1981 article, "Conspiracy rhetoric: from pragmatism to fantasy to public discourse" (*Western Journal of Speech*), will be utilized.

MEANINGS OF THE "RIDER'S SONG:" IMMERSION IN A SPANISH POEM.

J. Noble Simpson (English)
Kimberly Contag, Faculty Mentor (Modern Languages)

My presentation is an interpretation of "Cancion de jinete" (Rider's Song), one of Frederico Garcia Lorca's most famous poems. The research for this interpretation includes the influence of Lorca's life on his work, the cultural context of the poem, and its various critical interpretations. By representing this information using Microsoft PowerPoint, I am able to draw upon paintings, photographs, images, movie clips, music, sound affects, and their movements and arrangements to show, not only what literally happens in "Cancion de jinete," but also what its imagery and events may have signified for Lorca and Spanish culture.

My interpretation is threefold: a Formalist analysis of what the poem means when taken alone; an historical criticism of what it means in the context of its time, culture, and language; and finally, my own interpretation resulting from research, experience, beliefs, and perspective as a student in twenty-first century America.

THE EATING HABITS OF A MID-WESTERN UNIVERSITY: A PILOT STUDY.

Jenny Sorenson (Nursing)
Bikash Nandy, Faculty Mentor (Health Science)

The eating habits of college students differ greatly among different persons, but it is during college that healthy eating habits are especially important. Many college students eat unhealthily, which often leads to obesity. According to the American Dietetic Association (ADA), obesity occurs in over one-third of adults over twenty years of age. There is also a dramatic increase of obesity in youth as, according to the ADA. Individuals who are obese and who do eat unhealthily are linked to cancer, cardiovascular disease, diabetes, and osteoarthritis. Today, United States families spend an average of forty cents out every food dollar on meals away from home. People seem to prefer to eat out instead of eating meals at home or, for college students, in an apartment or dormitory. People who do go out to eat receive a higher intake of fat, sodium, calories, and saturated fats. This includes increased portion sizes according to the ADA.

In view of unhealthy eating habits of college students, I will randomly select 100 students from Minnesota State University and ask them to fill out a questionnaire. The data will be analyzed and interpreted. The results will be used to formulate policies and develop programs to prevent this unhealthy and even deadly lifestyle.

THE PURPOSE OF SOUND.

Hui-chi Hsia (Art)
Brian Frink, Faculty Mentor (Art)
Diana Black, Faculty Mentor (Art)

In this project, I will explore how our memory connects to sounds that surround us and how sounds leave their imprint on our imagination. We are used to seeing this world with our eyes. Blind people deeply understand how sounds create environment. If we can feel or imagine physical objects, can we feel the texture of a sound? What is the sound of a city, a town, or the home where you live? What is the sound of Mankato in 1997 and 1999? Maybe it is too abstract to record, but it leads me to experiment with sound in the environment. I am interested in how we react to sound and the images that we create in our minds when we hear something. One day, travel agents might use tapes of city sounds instead of picture brochures in order to promote a place. If we are overly dependent on vision, after only hearing sounds, would we still have the same interest in visiting that place?

I am going to manipulate images and sounds in the computer. I also would like to present my paintings and explain how these works are related to my memory. I would like to invite you to enjoy my sound diary. I will use the computer to present my sounds and my response to it with imagery. At the same time, I will exhibit my paintings.

WHY DO WE STOP EXERCISING?

Nicole Palacios (Exercise Science)
Kent Kalm, Faculty Mentor (Human Performance)

The question about the reasons why people stop exercising is a valuable one to pursue. Children are constantly running, playing, and being active in sports and other activities. As they age and leave elementary and high school, many people seem to become inactive.

The first step to finding the cause for this inactivity will be done in my research in the library and on the Internet where I will look at scientific journals that have many articles on this subject. Then, to find out why students at Minnesota State University stopped being actively engaged in exercise, I am going to use a random sample of 100 students and have them fill out the exercise survey found on the website: www.straws.com/exercise, which addresses the question of why people stop exercising.

This survey will also be given to 100 adults who are in the work force. The key of the study will be to discover why people stop exercising after they finish their secondary education. If they still exercise, their reasons for continuing to exercise could be beneficial for motivating sedentary people.

AFFECTS OF DIVORCE ON COLLEGE STUDENTS' RELATIONSHIPS.

Sarah Milow (Psychology)
Barry Ries, Faculty Mentor (Psychology)

The purpose of this study is to examine the affects of parental divorce on college students' intimate relationships. It has been estimated that half of the marriages today will end in divorce (Ahlberg & De Vita, 1992). How does this event affect the children involved?

Two hundred students from Minnesota State University will respond to a questionnaire assessing their definition of intimacy, the frequency of intimate contact, and the level of trust involved in these relationships. It is anticipated that college students who experienced divorce in their immediate families will select behaviors higher on the sexual behavior hierarchy, will have had more intimate partners in the last three years, and will have become intimate at an earlier age than those individuals from an intact or remarried family atmosphere. Furthermore, it is anticipated that college students whose nuclear families experienced a divorce will have less trust in their relationships. Additionally, students who experienced divorce in their families before they were thirteen years of age will report less intimate contact and trust problems.

A COMPARISON OF TURN TAKING IN THE SPONTANEOUS SPEECH OF CHILDREN WITH WILLIAMS SYNDROME AND TYPICALLY DEVELOPING CHILDREN.

Cory Woller (Communication Disorders)
Katie Rybak (Communication Disorders)
Katie Lash (Communication Disorders)
Molly Rourke (Communication Disorders)
Patricia Hargrove, Faculty Mentor
(Communication Disorders)

Williams Syndrome is a genetic disorder accompanied by developmental delay. Children with Williams Syndrome are considered more talkative than typically developing children. However, much of the evidence for this claim is based on parental reports rather than on empirical research. Therefore, the purpose of this project is to answer the question "Are children with Williams Syndrome more talkative?"

Using audiotapes from the Speech and Hearing Clinic, six children with Williams Syndrome and six children whose language is typically developing will be studied. The children's spontaneous speech samples will be analyzed using a computerized language system (SALT).

Based on claims in the literature, it is expected that the Williams Syndrome subjects will dominate conversations more than typically developing subjects. Such findings would support the view that children with Williams Syndrome are very talkative.

THE PRODUCTION OF LABELS IN NARRATIVES (STORIES) BY CHILDREN WITH WILLIAMS SYNDROME AND TYPICALLY DEVELOPING CHILDREN.

Erica Anderson (Communication Disorders)
Patricia Hargrove, Faculty Mentor
(Communication Disorders)

The purpose of this project is to compare the use of labeling items and events in stories rather than the use of plots for children with Williams Syndrome and typically developing children. The literature suggests that children with Williams Syndrome use more advanced language skills than would be expected based on their IQs. They are of interest to me because I want to see if their story telling is more advanced as well.

Audiotapes of the speech of children with Williams Syndrome and typically developing children are available in the Department of Speech, Hearing, and Rehabilitation Services. The audiotapes of six children with Williams Syndrome and six children whose language is developing typically will be analyzed using a computerized language system (SALT). Comparisons will be made of the frequency of labeling behaviors.

I expect that the Williams Syndrome subjects will display more frequent labeling because of my previous exposure to Williams Syndrome. This contradicts expectations from available literature.

THE MEAN LENGTH UTTERANCE IN SPONTANEOUS SPEECH OF CHILDREN WITH WILLIAMS SYNDROME AND TYPICALLY DEVELOPING CHILDREN.

Lynne Bremer (Communication Disorders)
Patricia Hargrove, Faculty Mentor
(Communication Disorders)

The Department of Speech, Hearing, and Rehabilitation Services has collected samples of speech from children with Williams Syndrome (WS), a form of mental retardation. The purpose of collecting the samples is to compare the language skills of children with WS with those of their typically developing peers. Much literature has published that indicates children with WS have better than expected language skills. The purpose of this project is to answer the following question: Do children with Williams Syndrome produce longer sentences (i.e., mean length of utterances) during spontaneous speech than typically developing children? Six children with WS and six typically developing will serve as subjects. All samples will be analyzed using a computer program called SALT.

We predict that children with WS will have language skills that are comparable to, or exceed, those of typically developing children. The information from these people can be used to help understand the joys and frustrations of those who live with a mental challenge in our modern world.

PRODUCTION OF COMPLEX/COMPOUND SENTENCES IN THE SPONTANEOUS SPEECH OF TYPICALLY DEVELOPING CHILDREN AND CHILDREN WITH WILLIAMS SYNDROME.

Maureen Boyle (Communication Disorders)
Patricia Hargrove, Faculty Mentor
(Communication Disorders)

Children with Williams Syndrome, a developmental disability, are reported to speak more eloquently than typically developing children. One way of judging eloquence is to compare the amount of complex and compound sentences in speech. The Department of Speech, Hearing, and Rehabilitation Services has audiotapes of the speech of children with Williams Syndrome and typically developing children. The audiotapes of children's spontaneous speech samples will be analyzed using a computerized language system (SALT) to compare the samples of the Williams Syndrome and typically developing children.

The purpose of this comparison is to answer the question "Do children with Williams Syndrome use more complex/ compound than typically developing children?" Based on claims in the literature, it is expected that the Williams Syndrome children will use complex/compound sentences more frequently than typically developing children.

THE NEED FOR PALLIATIVE CARE IN THE U.S.

Suzanne Loen (History and Speech Communication)
Lisa Perry, Faculty Mentor (Speech Communication)

Up to ninety percent of cancer patients, according to *All Things Considered* of November 27, 1997, suffer through severe pain during the last three weeks of life. There is a little known branch of medicine called palliative care, which cares for the terminally ill. Doctors use means such as pain medication to care for individuals rather than trying to cure their disease. The National Hospice and Palliative Care Organization stated that over 300,000 people died in organizations affiliated with them in 1998. Over 300,000 people are a small fraction compared to millions of terminally ill patients who die in hospitals and nursing home every year.

This research paper will examine the state of palliative care in the United States and make the argument that doctors need to use palliative care for terminal patients.

STANDARD FRAME STRUCTURE FOR FUTURE E-COMMERCE.

Mohammad Arifur Rahman (Computer Information Sciences)
Mahbubur Rahman Syed, Faculty Mentor
(Computer Information Sciences)

There are many e-commerce web sites on the Internet but most of them are not standardized. Because of that, most of the e-commerce businesses face the same problem of Business-to-Business (B2B) communication.

The research will concentrate on the study of existing e-commerce web sites and suggest a standard structure for future e-commerce sites. I will provide the structural solution in a web site and Wireless Application Protocol for wireless e-commerce.

QUALITY OF DRINKING WATER IN THE MANKATO AREA SCHOOL DISTRICT: A PILOT STUDY.

Afolabi Runsewe (Health Education)
Andrew Tippins (Elementary Education)
Bikash Nandy, Faculty Mentor (Health Science)

Studies and observations establish the fact that every year up to 1,000 new contaminates enter our drinking water supply. According to a leading citizen lobby, U.W. water has 2,100 toxic chemicals causing cancer, cell mutation, and nervous system disorders. Existing water treatment plants are not sufficiently designed to remove the new toxic chemicals. The government is also acting slowly to regulate the high rate of chemicals.

In 1996, the *Los Angeles Times* reported that communities with drinking water contamination by chemicals are being hit with strange patterns of illness. In view of the circumstances, a pilot study has been undertaken to collect samples of tap water from different Mankato area schools to check the quality of the drinking water. These samples will be tested for major chemicals such as chlorine, lead, and aluminum. These three chemicals have been linked to cancer, Alzheimer's disease, and memory loss in small children. Results of the study will provide preliminary data to help the community further expand the investigation and formulate a strategy for improvement of drinking water quality.

PALEOARCHAEOLOGY AT THE GAULT SITE IN SOUTHERN TEXAS.

Wendy Munson (Anthropology and Environmental Science)
Mike Scullin, Faculty Mentor (Anthropology)

The prevailing archaeological view of the population of the Americas has been of Eurasians, around 14,000 years ago, crossing a bridge of land between Siberia and Alaska created by lower than present ocean levels during glaciation.

Within the last ten years, artifacts found at many sites in North and South America are causing researchers to rethink the dates and routes of entry taken by the first Americans. Gault, a paleoarchaeological site in southeastern Texas, is one of those sites. The Gault site has produced the largest assemblage of lithic artifacts, labeled "Clovis" by their dates and characteristics. The Gault site in Texas is one of the most prolific paleoarchaeological sites in North America.

Dr. Michael Collins, one of Gault's primary researchers, notes technological similarities between artifacts from Gault and older artifacts found in southwestern Europe. Work at Gault may help scientists answer questions about where those people originated, when they arrived, how they lived, and subsequently, what happened to them.

AFFECTS OF BLOOD PRESSURE OF THE OFFSPRING OF SHR SUBJECTED TO ALDOSTERONE INFUSION DURING GESTATION.

Birney Baker (Biology-Business)
Chris Voegele (Chemistry)
Penny Knoblich, Faculty Mentor (Biology)

The spontaneously hypertensive rat (SHR) is a model for the study of hypertension. Research has shown that restricting sodium intake of the mother during pregnancy may reduce severity of hypertension in the offspring. Low sodium diets have been shown to markedly increase the hormone, aldosterone. Thus the rise in aldosterone may be responsible for the reduced blood pressure in the offspring.

The purpose of this study is to examine the affect on the offspring of SHR exposed to elevated plasma aldosterone without sodium restriction during gestation. Twelve female SHR will be mated to SHR males and, once pregnant, assigned randomly to one of two groups: Control - Pregnant SHR infused with vehicle; Aldosterone-treated - Pregnant SHR infused with aldosterone.

During pregnancy and the early postpartum period, an osmotic minipump will be used to increase plasma aldosterone to the extent that occurs with sodium restriction. Systolic blood pressure, measured by the tail-cuff method, will be used on the pups at five weeks of age and continue biweekly until pups are 21 weeks of age. The development of hypertension will then be compared between groups of offspring.

AFFECTS OF REGULAR VOLUNTARY EXERCISE OF PREGNANT SPONTANEOUSLY HYPERTENSIVE RATS (SHR) ON THE DEVELOPMENT OF HYPERTENSION IN THE SUBSEQUENT OFFSPRING.

Jenny Fields (Medical Technology)
Chris Busse (Biology)
Madelene Doring (Biology)
Penny Knoblich, Faculty Mentor (Biology)
Jeff Gilbert, Faculty Mentor (Biology)

No studies have examined the affect of maternal exercise on the degree of hypertension development in the offspring. The spontaneously hypertensive rat (SHR) is a model for the study of hypertension. This study will investigate the affects of regular, voluntary exercise of pregnant SHR on the development of hypertension in the subsequent offspring. All exercise will occur on an exercise wheel connected to a device that logs distance run. An average distance will be determined per study group for each week of the study. Systolic blood pressure of the offspring will be measure biweekly from five to 21 weeks of age. Twenty-four females will be assigned to one of three groups: Group 1 (sedentary) - no exercise before or during pregnancy; Group 2 (exercised) - exercise wheels will be placed in the cages immediately after confirmation of breeding and will be removed after the birth of the pups; Group 3 (pretrained) - exercise wheels will be placed in the cages at least three weeks prior to breeding and will be removed after the birth of the pups.

EVALUATING CRISIS INTERVENTION TRAINING RECEIVED BY MENTAL HEALTH PROFESSIONALS.

Philippe Goetstouwers (Psychology)
Tawiila Hafidh (Psychology)
Daniel McLaughlin (Psychology)
Matthew Riewe (Psychology)
Michael Fatis, Faculty Mentor (Psychology)
Jay Munneke, Mentor (Psychology)

On-call services and crisis intervention programs allow mental health professions to provide emergency care to patients after working-hours.

The purpose of this descriptive study was to assess potential differences in the on-call training received by professionals who provide after-hours crisis interventions. A mail survey was administered to licensed psychologists throughout the state of Minnesota asking participants to comment on their educational experiences.

DETERMINING THE PLOIDY AND COUNTING CHROMOSOMES OF *PACKERA PAUPERCULA* USING STAIN AND SQUASH TECHNIQUES ON MICROSPOROCYTES WITHIN IMMATURE ANTHERS.

Bruce Martems (Biology)
Alison Mahoney, Faculty Mentor (Biology)

Members of North American genus *Packera* are easily identified from other plants but often difficult to separate from one another. Chromosome counting successfully differentiates among some specie and/or varieties. One species, *P. paupercula*, is currently divided into two varieties. *Packera paupercula* var. *paupercula* is geographically widespread and poly-morphic and var. *crawfordii* is a rare bog and flood plain endemic of the southeastern United States. A number of races of *P. paupercula* var. *paupercula* have been observed in the Midwest, some of which are poly-ploids. These races are probably distinct enough to recognize as varieties. The purpose of this study is to determine the ploidy of locally collected populations of *P. paupercula* using chromosome-counting techniques. Meiotic cells (microsporocytes) from immature anthers are stained with an aceto-carmine solution, teased apart from other cells under a dissecting microscope, mounted on a slide with Hoyer's mounting medium, squashed to reveal desired cells, and examined under a phase contrast microscope to determine ploidy and count chromo-somes. The data acquired in this experiment will be added to a larger systematic study currently being done on midwestern races of *P. paupercula*.

PHYLOGENETIC ANALYSIS OF FRESHWATER SEDIMENT BACTERIA CULTURED FROM A PHENOL ENRICHMENT MICROCOSM.

Warren McCormick (Microbiology and Spanish)
Elaine Hardwick, Faculty Mentor (Biology)

Bacterial isolates obtained from Hiniker Pond sediments (North Mankato, MN) were selected for their ability to use phenol as their sole carbon source. Phylogenetic analysis of their 16S rRNA genes will facilitate identification of these isolates. Initially, the isolates were placed into two different microcosms: one containing phenol as the sole carbon source, and one containing no phenol (control group). Every 30 days, the isolates were cultured onto agar containing phenol (M9 + phenol) and a nutrient agar without phenol (control). Morphological results were obtained from those bacteria growing on the phenol enriched media, and biochemical tests of these isolates further aided in the identification of the sediment bacteria. Unique isolates, based on the results of the biochemical tests, were used for phylogenetic analysis of the 16s rRNA. The 16s rRNA was extracted, and PCR (Polymerase Chain Reaction) amplified the rRNA, which was then sent to the University of Minnesota's St. Paul Advanced Genetic Analysis Center (AGAC) for sequencing. The sequence data was then analyzed and the web-based programs BLAST and PHYLIP were used to identify the isolates chosen for sequencing. Any unique 16S rRNA will be contributed to GenBank upon completion of sequence analysis.

THOMAS HARDY: A PHOTOGRAPHIC PRESENTATION.

Rhonda Roesch (Interior Design)
JoAnna Mink, Faculty Mentor (Interior Design)

Perhaps, for more than any other Victorian author, environment is an integral part of Thomas Hardy's novels. Architectural details describing churches and houses, as well as aspects of the Wessex landscape, not only add interest and dimension to his plots and characters, but also provide a statement about the enduring relationship between humans and their universe.

This slide presentation is a photographic interpretation of Hardy's statements about architecture and landscape as I visualized them during my participation in the MSU Thomas Hardy England Program.

A PERFORMATIVE PROGRAM ON HEALING AND THE KENT STATE TRAGEDY.

Jason Spitzer (Marketing)
Daniel Cronn-Mills, Faculty Mentor
(Speech Communication)

On May 4, 2000, crowds gathered at Kent State University to remember the victims from the Kent State tragedy. Now, after 30 years, it is important we remember what happened on this historic site.

I provide a performance blending multiple genres of literature into a program that explores the healing process involving the Kent State tragedy.

AN ANALYSIS OF THE VISUAL RHETORIC IN THE "LADIES OF RYLSTONE CALLENDAR."

Anne Gerbensky (Mass Communications)
Daniel Cronn-Mills, Faculty Mentor
(Speech Communication)

The "Ladies of Rylstone Calendar," featuring images of middle-aged, nude, British women, is shattering cultural standards and has created an international phenomenon. According to the *London Times* of December 3, 2000, the calendar has sold nearly three hundred thousand copies and raised $750,000 for leukemia research.

The success of the calendar is analyzed using the concept of constrained agency outlined by Dr. Lynn O'Brien Hallstein in her 1999 article, "A Post-modern Caring: Feminist Standpoint Theory, Revisioned Caring and Communication Ethics," published in the *Western Journal of Communication.* Using Hallstein's theory of constrained agency to examine the "Ladies of Rylstone Calendar" allows several implications to be drawn concerning its visual rhetoric.

BORN TO RAPE?

Lisa Becker (Anthropology)
Paul Brown, Faculty Mentor (Anthropology)

The field of behavioral ecology is concerned with tracing the link between ecological factors and adaptive behavior. Certain theories in behavioral ecology stress the importance of sexual selection through mate choice.

An emerging theory in this field pertains to the male propensity for coercive sexual intercourse. This theory does not imply that this behavior is absolutely biologically determined. It simply states that rape, while socially unacceptable to modern humans, may have been beneficial to some males in some circumstances. Was this behavior advantageous to some of our evolutionary ancestors? Does this biological "hardwiring" mean that males have a license to rape?

This paper will attempt to answer these questions through an analysis of current behavioral ecology literature concerning male vs. female reproductive strategies. I will also address the social implications of this data.

INVESTIGATIONS OF THE AFFECT OF TA ON POWDER-IN-TUBE Nb_3Sn SUPERCONDUCTING WIRES.

Adam Johnson (Physics)
Louis Schwartzkopf, Faculty Mentor (Physics)

Studying the magnetization and heat capacity data of superconducting materials allows many of the characteristic superconducting properties to be measured directly or extrapolated from the data. This research compares binary and ternary (Ta) Nb3Sn multifilamentary Powder-In-Tube superconducting wires made by ShapeMetal Innovations, Holland. The Powder-In-Tube process allows for growth of an inhomogeneous Nb3SnA15 superconducting layer due to heat treatment.

The two wires compared had different sizes and numbers of filaments. To examine the effect of Ta and heat treatments on superconducting properties, image analysis and magnetization and heat capacity measurements and were conducted. Image analysis revealed the growth of the A15 layer as a function of time. Magnetization measurements found higher upper critical field and irreversibility field measurement in the 47-hour heat-treated ternary wire. Very little difference between the wires was found for critical temperature and critical current density measurements.

GETTING A FEEL FOR SPANISH POETRY THROUGH PERSONAL COMPOSITION

Jason Brown (Spanish)
Kimberly Contag, Faculty Mentor (Modern Languages)

My piece focuses on a poem written by Gustavo Adolfo Becquer entitled *Rima XXI.* It poses the question, "What is poetry?" By using digitalized video, music, and literature in the form of narration and text, I attempt to answer that question. I analyze Becquer's work with a supplemental personal composition of what poetry means to me; how it affected the literature of decades ago; how it continues to *live* today. I examine, through my work, the way in which poetry, once a popular means of expression, continues to thrive today in a life all its own. I bring forth my own interests in writing and attempt to create, both visually and orally, a pulse in literature through a language that is not native to me. I build a network of bridges between the poetry of today and long ago, how it unites people over great distances, and how it comes from my perspective to you, the audience. The challenges I confront through this undergraduate resource project go beyond the limitations of lacking fluency in a language not my own. It goes deeper to analyze and portray the sensation that the poet was trying to offer his readers. Utilizing images such as photos, videos, and pictures in conglomeration with personally composed and recorded music and sound tracks, I attempt to shed light on literature of the past.

GETTING A "FEEL" FOR THE CULTURE OF A SPANISH-SPEAKING COUNTRY.

Marti Sievek (Spanish)
James Grabowska, Faculty Mentor (Modern Languages)

One of the goals of second-language study is to increase knowledge and understanding of the cultures that use that language. In the case of Spanish, it is very difficult to master all the cultures of the countries in which Spanish is spoken. However, it is possible to learn about one.

My presentation includes an interactive multimedia document that demonstrates my experiences with the culture of a Spanish-speaking country through different media (drawing, composing, arranging, designing, compiling, filming, etc.). The multimedia project embraces *languages* such as music, drawings, films, and sound affects (in addition to spoken and written Spanish), and allows me to express my understanding of what I have researched in a more comprehensive way.

The objective is to be able to share the information I have gathered, learned, and interpreted with a larger audience of classmates, peers, future employers, friends, and family. I will demonstrate that I have greater "ownership" of my learning, because I will be able to show how I used digital technologies, conducted research, read and understood a variety of materials in a second language, and made appropriate choices in content, media, and artistic expression for my project.

DIVERSITY OF CULTURABLE BACTERIA ISOLATED FROM FRESHWATER SEDIMENTS.

Kimberly Van Demark (Microbiology)
Elaine Hardwick, Faculty Mentor (Biology)

The plate count technique, dilution scheme procedure was used to determine the abundance of culturable bacterial during seasonal shifts. The sediment samples were collected monthly (August through March) from Hiniker Pond, a former gravel pit located in North Mankato, MN.

Biochemical tests made it possible to identify some of the cultures of bacteria and to show that there were different culturable bacteria during the course of this study. The bacterial numbers changed greatly from August to November. The abundance of culturable bacteria on LB increased more than 20 times from August to November. Many of the same types of bacteria were present each month, but there were also some isolates that were cultured in only one specific monthly sample.

The biochemical tests show physiologically diverse bacterial populations that appear to be changing with seasonal shifts.

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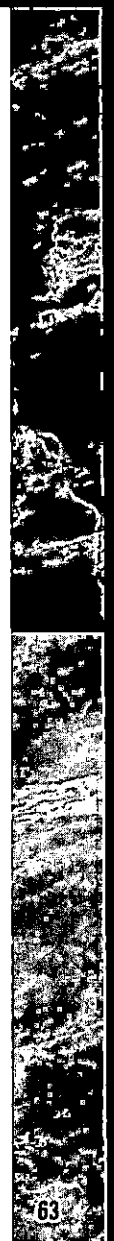

Key to Information Provided:

Title of Presentation
Name of Student(s) (Student's Major)
Name of Faculty Mentor(s) (Mentor's Department)

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April 3, 2001

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