

Valpo CORE Reader

Joseph Goss, Editor

The Valpo CORE Reader features some of the best writing done from the previous year, highlights models of the kinds of writing students will be doing in the current year, and perhaps most importantly, invites additional ways of thinking about our texts.

The idea of research is closely related to one of the best aspects of a portfolio writing course—its emphasis on revision. Revision, like research, implies work over time, and most of the time, “seeing again” and “searching again” take place through dialogue with others. One of the larger papers which involves both re-searching and re-visioning is the “Worker Profile,” an ambitious paper in the second semester that involves interviewing and contextual framing.

Some students take the Worker Profile assignment as an opportunity to learn something about an area of work to which they feel some sort of calling themselves. Others use it to peer more deeply into the life of *someone* to whom they feel a deep connection. For all students, it provides an enhanced perspective on “the human experience” (which is, after all, the title of the course). Work is an issue because humans are an issue; the things humans do from day to day fit into the larger scheme of what humans strive for, what they need and want more than anything else, what they must do in order to be themselves. We find these sorts of thoughts stated in the Worker Profile papers over and over, emerging as a sort of collective wisdom that we hope Core students will carry with them throughout their academic careers and beyond. We are grateful to have been given permission and support to devote time to serious thinking about the spiritual world of vocation and how first-year students think about their place in that world, and we are grateful to participate in the Celebration of Undergraduate Scholarship.

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Reigniting the Spark in Reading

Kendal Ahlmann, Katie Davis, Jackie Kenyon, Peter Berg, Brenna Roy

Departmental Affiliation: Communication
College of Arts and Sciences

In our technology run world, it is believed reading has plummeted amongst the younger ages. Often the belief about television and Play Stations dominating the time of the youth discourages efforts to attract the youth to the importance of reading. This project analyzed the literature taught in junior high and high school classes and the ways in which these lessons are conducted. Through research, the Bateman team (a national Public Relations Student Society of America competition) established that junior high and high school students have not stopped reading. The material covered in literature courses simply no longer appeals to the age groups, thus they go elsewhere to find entertaining reading. Our team organized what we have found to be the key elements of reading for the given age group after conducting various personal interviews along with a presentation to 250 eighth grade students. Post test results documented further the personal responses of these students. These elements included: establishing a purpose for reading, discovering the key point, and relating elements of the document to situations the students can understand aids in the desire to read. One does not appreciate what one cannot understand and from our various steps of research, the VU Bateman team formatted a presentation to empower children to want to read.

Information about the Authors:

Kendal Ahlmann is a junior public relations and creative writing double major with a minor in ethnic studies. A PRSSA member for two years, she is currently publicity chair for the organization and the head coordinator of this year's Bateman National Case Study competition. Katie Davis is sophomore public relations major from Omaha, Nebraska. At Valparaiso, she is the vice president of PRSSA. Last February, Katie co-coordinated the Internship and Job Fair for the "Chicago Taste of PR" PRSSA Regional Activity. Peter Berg is a junior public relations major and TV-radio minor from Chicago, Illinois. He is on the executive board for PRSSA as VP of Programming and the executive board of Student Senate as Public Relations Coordinator. Jackie Kenyon is a sophomore public relations and graphic design major with a minor in dance. She is Vice President of Finance for PRSSA, and is actively involved in Spark PR. Brenna Roy is a freshman public relations major and music minor from Medina, Ohio. On campus, she is involved with Public Relations Student Society of America (PRSSA), SPARK PR, the Bateman Campaign, Chorale, and Kappa Delta.

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Light Therapy for Alzheimer's Disease

Amanda Aust, Katie Green, Amber Ludwig, Terry Pope, Jen Reusnow, Jessica Slont, Shelly Wanta

Departmental Affiliation: Nursing
College of Nursing

The purpose of this evidence based research project was to determine if light therapy is an effective treatment for patients with Alzheimer's disease. The databases searched were CINAHL, Cochrane Library, and PubMed using the key words Alzheimer's, light therapy, dementia, phototherapy, and sleep. Analysis of the studies showed the

samples included patients with Alzheimer's or dementia. Using a variety of designs, most studies used light as an intervention. Findings indicate light therapy alone does not regulate patients' sleep-wake cycles. Supplemental use of melatonin in conjunction with light therapy may improve outcomes. Due to inconclusive findings, we do not recommend light therapy alone as an intervention. Patients could benefit from additional studies about melatonin supplementation in conjunction with light therapy in Alzheimer's patients. We recommend that an experimental 3 group pretest-posttest design be conducted to measure the effect of varying doses of melatonin supplementation with light therapy. A minimum of 30 Alzheimer's patients with no eye diseases or allergies to melatonin from extended care facilities specializing in Alzheimer patients will be recruited. All groups will receive one hour light therapy daily with varying doses of melatonin. Hours of sleep via Actigraph monitor and the frequency of daytime naps will be measured.

Information about the Authors:

The seven authors are traditional and accelerated senior nursing students who are ready to spread their wings and fly to different parts of the United States. They are looking forward to utilizing their knowledge of evidence-based practice in providing care for their patients in a variety of settings.

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Valparaiso Community Schools Gifted and Talented Program: An "Elementary" Introduction to Nanotechnology

David Beck, Larry Gatz

Departmental Affiliation: Electrical and Computer Engineering
College of Engineering

Schools nationwide are struggling to form programs for gifted and talented students due to budget cuts and limited teaching expertise. This project addresses a self-sustaining program that reduces these concerns. The Valparaiso Community Schools Gifted and Talented Program provides an experiential learning opportunity to the fourth and fifth graders in the Valparaiso area. The Valparaiso Community Schools administration and the faculty and undergraduates of the College of Engineering partnered together to bring an activity-based, nanotechnology curriculum into the classroom. The administration informed eligible students' parents of the program and selected the interested students for enrollment. The role of the College of Engineering faculty was to develop the nanotechnology curriculum to be implemented over three two-hour sessions. Two undergraduate engineering students served as instructors for each Introduction to Nanotechnology course and assisted in the development of the curriculum. Enlisting Core Science and Mathematics Academic Standards in the curriculum resulted in a success rate of over 90% of the intended objectives. The students were able to explore quantum wells, Ohm's Law, memristors, and nanorobots through hands-on activities. The necessity and importance of this program can be realized through the positive learning effects on the students and the continuous support from the parents.

Information about the Authors:

David Beck is a junior electrical engineering and mathematics major. When the Gifted and Talented Program was developed, he was excited by the opportunity to expand his tutoring experiences. Teaching nanotechnology has allowed him to share with a young and eager-to-learn audience a discipline for which he holds deep passion. His aspirations include obtaining a Ph.D. in communication networks and conducting research in mixed signal analysis. Larry Gatz is a senior electrical engineering major from Morrison, IL. He joined this project because he enjoys fostering an interest for electronics in the youth. He aspires to become a field engineer upon graduation. He will later seek an MBA to become a project manager.

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The Physical Trout Habitat of a Section of the Little Kankakee River

Chris Bitcheno, Rudy Bartels

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College of Arts and Sciences

This paper will analyze trout habitat suitability in the Little Kankakee River between CR 100 and Route 4 in LaPorte County. Based on previous research, we identified four most important physical stream criteria for suitability: overhanging stream banks, pools, riffles, and shade. We first had retrieved some stream velocity and temperature readings for the study area that were taken in the summer of 2008. This was needed to make sure that this was a worthwhile project to conduct, for if they are not within the acceptable range, trout cannot survive. We then collected field data on each of the criterion to create a GIS database. The data layers were overlaid to map the areas with the best physical habitat for trout. A biological and chemical analysis of the stream would give us a better idea of the sustainability of trout in the river, and will be addressed in further research.

Information about the Authors:

Both Chris Bitcheno and Rudy Bartels are interested in GIS and the environment. Chris has participated in a couple of stream restorations with the Biology Department and is also an avid fisherman. Rudy is also a good fisherman. Rudy has a strong interest in lakes and streams because of living on Lake Michigan. So they thought this topic would be a prime choice considering both of their interests.

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Point Vibration Therapy Device for Individuals on the Autism Spectrum

Jonathan Blackwell, William Burgett, Eric Devine, Christopher Handley, Steven Lehmann, Catherine Renken, Kimberly Sajevic, Elayna Strell, Rebecca Van Aartsen, Kevin Wagner

Departmental Affiliation: Electrical Engineering, Mechanical Engineering, and Psychology
College of Engineering and College of Arts and Sciences

The Autism Society of America estimates that 1 in 150 American children struggle with Autism Spectrum Disorder (ASD). Children with ASD sometimes have difficulty determining the spatial positioning of their limbs, leading to increased anxiety levels and self-stimulatory behavior. Our objective is to help children with ASD integrate into classroom settings by reducing this disruptive behavior. Previous studies by Grandin have shown that apparatuses designed for sensory stimulation are successful in decreasing self-stimulatory behavior in children with ASD. A study performed by Goodall and Corbett found that intermittent vibration also decreased self-stimulatory behavior. However, many of the current sensory stimulation apparatuses are prohibitively large, expensive, and conspicuous. To provide discreet sensory stimulation to a student in a classroom environment, we are developing a Point Vibration Therapy Device (PVT), designed to apply a vibration stimulus to the wrist or upper arm. The PVT is completely portable and approximately the size of a large wristwatch. The vibration stimulus is generated by two weighted disk motors, powered by a lithium-ion battery and regulated by a microcontroller. Parameters of the vibration stimulus, such as the intensity and duration of vibration, can be programmed to the PVT via a personal computer interface.

Information about the Authors:

William Burgett, Eric Devine, Steven Lehmann, and Rebecca Van Aartsen are senior mechanical engineering students, while Jonathan Blackwell, Christopher Handley, Kimberly Sajevic, and Kevin Wagner are senior electrical and computer engineering students. Catherine Renken and Elayna Strell are senior psychology students. Together they comprise the 2008-09 Valparaiso University senior design team working on the Point Vibration Therapy Device. The psychology students and faculty provided initial research and information on ASD and contributed to the system design requirements of the PVT. In addition, they will test the effectiveness of the PVT with individuals on the Autism Spectrum in the summer of 2009. To facilitate this field study, the engineering students have designed and manufactured a PVT prototype and are building 10 complete units.

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The Value of Public Relations When Creating Visual Symbols: A Nonprofit Case Study

Gabriele Bladdick, Scott Hannon

Departmental Affiliation: Communication
College of Arts and Sciences

The Juvenile Diabetes Research Foundation is not well known. Initially, it is the JDRF's visual symbols that seem to be lacking. In a pretest using a variety of health logos, the data was gathered to substantiate the earlier observations. A questionnaire was developed to focus on four different logos. Three of the four logos were "well known" such as breast cancer awareness (a pink ribbon), women's heart health (a red dress), and a Live Strong bracelet (cancer awareness). The fourth logo or JDRF was taken directly from their website. The populations surveyed were students enrolled in communication. In public relations practice, the use of visuals are essential, especially to bring awareness to the kind of context, organization, or effort that is being developed. The results indicated that more than half of the surveys did not recognize JDRF's logo. The majority of the surveys recognized the breast cancer, heart disease, and general cancer awareness logos. The project focused on creating a new logo for JDRF with a follow-up plan to evaluate the effectiveness of a more thoughtful visual. Since promotions do not rely on funding, the credibility of public relations is greater than advertising or marketing for nonprofits.

Information about the Authors:

Gabriele Bladdick is a sophomore public relations major with a minor in business from St. Louis, Missouri. Gabriele is the current philanthropy chair of the women's fraternity, Kappa Kappa Gamma. She is the public relations chair of the Relay for Life planning committee and a PRSSA member. Scott Hannon is a senior marketing major with a minor in public relations, originally from Buffalo, NY. His interest in JDRF stems from numerous former jobs and internships with nonprofit work in his home town. At Valparaiso, he is a member of Phi Sigma Kappa fraternity and is a DJ at the Source 95.1, VU's campus radio station.

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Student Evaluation Scores and Teaching Load

Traci Blonquist, Tom Lee, Carly Anderson

Departmental Affiliation: Mathematics and Computer Science
College of Arts and Sciences

In 2004, the professors' credit load in the Math Department at Valparaiso University was decreased from 24 to 21 credits. We are interested in assessing whether the reduction was associated with better ratings on student evaluations from 1995-2007. To determine whether the evaluations changed significantly, two-sample t-tests and linear regression were performed. There are several scores explored in this paper, for example the overall course and professor ratings, all of which are assessed on a 5-point scale, with 1 being the highest. When we did t-tests to look for a difference between the pre and post-2004 means, we found that the difference of the means from pre to post fell 0.101 (p-value = 0.023) points for the overall course rating, and -0.099 (p-value = 0.066) points for the overall professor rating. Proceeding to regression where we looked for a difference between the mean evaluation scores from pre to post but also controlled for professor and course level, we found that the change was no longer significant. The mean of the post-2004 ratings was 0.49 (p-value = 0.208) points less than the pre-2004 mean for the overall course rating, and 0.017 (p-value = 0.228) points less for the overall professor rating.

Information about the Authors:

Tom Lee is a sophomore and is majoring in statistics and Spanish. Traci Blonquist is a junior majoring in chemistry and mathematics. Carly Anderson is a freshman majoring in secondary education and mathematics.

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A Study of the Relationship between Nutritional Knowledge and Healthy Eating Habits

Claire Brackmann, Megan Hamilton

Departmental Affiliation: Social Work
College of Arts and Sciences

The aim of this study is to explore the relationship between students' level of nutritional knowledge and their eating habits. The research hypothesis is that increased levels of nutritional knowledge are associated with healthier eating habits for college students. The sample for this study is comprised of approximately 150 college students at Valparaiso University. Participants are both male and female and are between the ages of eighteen and twenty-three. The constructs being measured are as follows: 1) Eating habits - how closely do participants follow the guidelines of the Five A Day campaign created by the Centers for Disease Control and Prevention which encourages people to consume a combined five fruits and vegetables every day as a means of promoting healthy eating habits, 2) Nutritional labels - how much do participants use nutritional labels when they are available, 3) Level of nutritional knowledge - how high or low participants score on questions created from basic nutrition facts published by the Center for Disease Control and Prevention. This research has implications for colleges and universities that wish to promote healthy eating habits for their students.

Information about the Authors:

Claire Brackmann is a junior social work major with minors in biology and chemistry. She hopes to join the Peace Corp out of college before receiving her masters in social work. Megan Hamilton is a junior social work major and a member of Christ College. After graduation, she hopes to attend graduate school to earn her masters in social work.

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Hurricane Ike's Impacts on Ozone Concentrations in Houston, Texas

Kristen Bradford, Sara Christensen

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Hurricane Ike made landfall in Texas on September 13th as the most intense storm of the 2008 Atlantic hurricane season. This project focuses on Ike's impacts on air quality, particularly the amount of ozone pollution, in the Houston area. Ozonesonde data was taken online from the Texas Commission on Environmental Quality and surface data was taken from Moody Tower at the University of Houston. This information was then analyzed and compared with previous years' observations in order to further assess the storm's impact on air quality in Houston.

Information about the Authors:

Sara Christensen is currently a junior meteorology major from Bettendorf, Iowa. She is also involved in cross country and track at field at Valpo. After graduating, Sara looks forward to attending graduate school in order to find her niche in the field and is interested in pursuing a career in climate-oriented research. Kristen Bradford is a junior meteorology major from Ada, MI. She intends on continuing research this summer in Norman, OK as a member of the National Weather Center REU program. Once she graduates, she would like to attend graduate school to pursue a career in wind energy research.

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Rate-Determining Step of Propane Oxidative Dehydrogenation by VO₄H₃ Molecules: Gas Phase and Supported on TiO₂

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The rate-determining step of the oxidative dehydrogenation of propane on vanadium oxide structures in both gaseous phase and with a titania supported monomer structure was investigated in detail with intent of locating a spin crossing. The first step in this reaction is likely the rate determining step; for this first step, the reactants are in a singlet state, and the intermediate is in a triplet state. This implies that at some location in this first step there is a change in spin. The goal of this study is to find this location and its energy. Modifying the distance between two key atoms simulates the hydrogen transfer that occurs in the first step of the reaction. The spin crossing was found to occur at approximately 1.1 angstroms OH distance in the gas phase at approximately 48 kcal/mol relative to the singlet reactants. With a TiO₂ support, the distance was found to be 1.125 angstroms OH distance and 43 kcal/mol. Additionally, single point energy calculations were computed as a measure of accuracy for these partial optimizations. These calculations and the impact of f-functions on the basis set are also discussed.

Information about the Author:

Dan Brandt is a junior physics major. He currently plans to obtain his Bachelor's degree in physics, then attend graduate school or seek employment. His interest in this subject was sparked by a presentation given by Stan Zygmunt, who became his faculty advisor for this research.

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An Analysis of Tactics and Strategies Used in Nonprofit Sports Promotions

Kendall Brown, Jackie Thomas

Departmental Affiliation: Communication
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Nonprofit organizations are prevalent in the public relations field. They rely greatly on fundraising efforts and/or government support in order to function financially. Community relations are key for nonprofits as they are reliant on the efforts of volunteers for many of their events and daily operations. This study examines nonprofit organizations and how they promote their sports programs. Several types of organizations were examined in order to identify the tactics and strategies being used and to determine their effectiveness. The nonprofit organizations in this study are all located in Valparaiso, IN or Porter County. A questionnaire was developed and administered to local nonprofit sports organizations and schools. The questionnaire consisted of Likert type scales, a semantic differential scale, multiple-choice questions and open-ended questions regarding the promotions and publicity efforts of the organization as well as the effectiveness of these efforts. Overall, results showed that nonprofits use a variety of promotions, often based on their budgets, and these efforts have varied levels of effectiveness that are often difficult to quantify.

Information about the Authors:

Kendall Brown is a senior public relations major and a business minor. She is a member of the Public Relations Student Society of America (PRSSA), Chi Omega sorority, the VU women's soccer team, and is the Co-President for Association for Women in Communications (AWC). Jackie Thomas is a senior public relations and sports management double major with a liberal arts business minor. She is a member of the women's soccer team and is currently fulfilling an internship with the VU athletic department and has also completed an internship with a minor league baseball team.

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Analysis of Ozone Concentrations in a Dissipating Tropical Convective System during TC-4

Gary A. Morris, Alex M. Bryan, Kelsey Obenour, Danielle Slotke, A.M. Thompson, P. Kucera, K. Pickering, B. Taubman, D. Lutz

Departmental Affiliation: Physics and Astronomy
College of Arts and Sciences

Twenty-five balloon-borne ozonesondes were launched in Las Tablas, Panama during the period 13 July to 9 August 2007 as part of the NASA TC-4 field campaign. One sounding underwent four distinct convective undulations between the altitudes of 2-5 km over a period of 90 minutes during ascent, allowing the rare and unique opportunity for in situ analysis of temporal variations of ozone within a convective cell. Ozone concentrations within the convective layer steadily increased by 10-15 ppb, suggesting local production via lightning or convectively-influenced transport of ozone. The results are compared with analogous cases where undulations were reported.

Information about the Authors:

Alex Bryan is a senior meteorology major from Mahtomedi, MN. He was a selected applicant for undergraduate research under Dr. Gary Morris in summer 2007. He continues to work with Dr. Morris on this and similar projects in atmospheric chemistry. He hopes to continue pursuing research in applied meteorology in grad school. Kelsey Obenour is a junior meteorology major with minors in math, physics, and geography. She is looking to pursue physical oceanography in graduate school. She would like to apply her knowledge in meteorology by studying the atmospheres' effect on the circulation patterns of the oceans. Danielle Slotke is a junior meteorology major from Milwaukee, WI. She enjoys working on research with Gary Morris in atmospheric research and will be continuing her research experience this summer at the University of Rhode Island. Danielle participates in NWA, VUSIT, and Delta Xi Phi.

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Isolation and Contentment in Neighborhood Segregation Patterns with Three Types

Mark Burek, Brian McDonough, Spencer Roach, Brit Wagoner

Departmental Affiliation: Mathematics and Computer Science
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In his book *Individual Strategy and Social Structure*, H. Peyton Young describes a particular version of Thomas Schelling's model of neighborhood segregation patterns. This paper begins to extend the work of Young to configurations of neighborhoods involving three types of individuals. Seven scenarios representing different possible biases amongst the three types are identified, and contentment levels at equilibrium for each scenario are investigated. Surprisingly, holding biases against other types increases the likelihood of being isolated.

Information about the Authors:

Mark Burek is currently a graduate student in psychology who has decided to dedicate his life to the pursuit of mathematics instead. He seeks to obtain a doctorate in mathematics and become a full-time professor and researcher. Brian McDonough graduated in December with double majors in mathematics and computer science. Spencer Roach is a freshman math major. Brit Wagoner is a junior who just declared her math major this year.

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Religious Involvement and College Students' Outlook on Life

Mele Cabral, Amy LaGrange, John Stern

Departmental Affiliation: Social Work

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The aim of this study is to determine whether college students who participate in weekly religious services have a different outlook on life than students who do not participate in weekly religious services. It is hypothesized that those students who attend weekly religious services will have a more positive outlook on life. Previous studies have found that individuals with an increase of daily spiritual experiences are associated with significantly higher odds of being happy, excited, satisfied with self, and optimistic about the future (Ellison & Fan, 2007). The primary purpose is to find if students on a religious campus, who attend the religious services, have a better outlook on their life compared to those students who do not attend these services. The findings of this study show a correlation between religious participation and a student's positive outlook on life. The sample for this study is comprised of undergraduate Valparaiso University students. The data was collected from students in two locations on campus; the student union and the university chapel. Hopefully this research will provide religious universities a context of how religious activities influence the lives of its students. It is hoped that this research will demonstrate the role that religious activities play in the lives of students, particularly with regard to life outlook.

Information about the Authors:

Mele Cabral, Amy LaGrange, and John Stern are all junior social work majors. Mele is a member of the Valparaiso women's soccer team and currently working as an intern at the Valparaiso Boys & Girls Club. Amy is currently interning at the Pines Village Retirement Community and is a member of the sorority Delta Delta Delta. John is the president of Valparaiso University's Habitat for Humanity chapter and is also a member of the group S.A.L.T., the social action leadership team. He is interning at juvenile probation of Porter County.

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Health Literacy and Preferences in Patient Education Materials

Lindsey Cirak, Sheryl Staub, Christina Garber, Jackie O'Reilly

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Discrepancies between patients' reading comprehension and the readability of patient education materials limit their ability to understand and manage their disease. The purpose of this research was to compare preferences in health education materials with REALM scores and determine if healthcare providers (HCP) viewed education materials differently from non-healthcare providers (NHCP). Four educational brochures relating self-management of diabetes were chosen; reading levels ranged from 5th grade to college. Consent was secured before participants ranked them by perceived usefulness. REALM scores and demographic information were collected. The sample of 33 participants, 4 males and 29 females ranging from 24-80 years old, was recruited from individuals attending a hospital health fair. With all being high school graduates, REALM scores ranged from 4-6th grade to high school. Over 59% of those with high REALM scores preferred the 6th grade brochure. While both HCP and NHCP preferred the same brochure; HCP chose the 7th grade brochure as their second choice while the NHCP chose the 5th grade brochure. The results of this study indicate easy-to-read materials are preferred regardless of health literacy level. Also, HCP and NHCP may view the usefulness of materials differently.

Information about the Authors:

Lindsey Cirak and Christina Garber are senior students in the College of Nursing. Sheryl Staub is a junior nursing student and Jackie O'Reilly is a sophomore nursing student. All have a particular interest in how health literacy affects patient outcomes.

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The Dinner Dilemma in Northwest Indiana: Communicating to Consumers the Ethics of Buying Local Food

Katie Davis, Michelle Niehaus, Jackie Kenyon

Departmental Affiliation: Communication
College of Arts and Sciences

With food scares such as salmonella and e-coli on the rise, consumers today are ever mindful of how and where their food is produced. This new trend leads cautious shoppers to rely more on farmers' markets, health food stores, and organic supermarkets, rather than the traditional grocery store. Communicators face multiple challenges when informing consumers about the ethicality of their food choices. The issues surrounding the safe and ethical production of food are further aggravated by the high energy inputs and transportation costs. A case study was conducted on Farm Direct Meat, LLC in order to better understand the challenges that Northwest Indiana's local food market faces when communicating promotional messages to consumers. Farm Direct Meat, LLC is a company in St. John, Indiana that sells pork, beef, lamb and poultry. The company sells naturally raised meat with no antibiotics or growth hormones. Owner Phyllis Bergiel works with local farmers to distribute their products locally at farmers' markets and health food stores. Her successes and obstacles set an example for communicating to the uprising audience of ethically conscious shoppers.

Information about the Authors:

Katie Davis is a sophomore public relations major from Omaha, Nebraska. At Valparaiso, she is the Vice President of PRSSA, and she serves as the Chapter President of Kappa Kappa Gamma. Katie will be representing Valparaiso University at the PRSSA National Assembly in New Orleans. Michelle Niehaus is a junior public relations and marketing major from Indianapolis, IN. She is currently the events director at the campus radio station, WVUR, and a member of PRSSA. Jackie Kenyon is a sophomore public relations and graphic design major and dance minor. She is the Public Relations Chairman for VU Ballroom and Kappa Gamma Sorority. Jackie is also involved in the PRSSA Spark PR team, and she serves as the Vice President of Finance for PRSSA.

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The 18 October 2007, Nappanee, IN Tornado Viewed by a WSR-88D Radar and a Dual-Polarized Radar

Stephanie Dunten

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On 18 October 2007, an EF-3 tornado came through Nappanee, Indiana in the northwest part of the state. This tornadic storm was also positioned near the weather forecast office North Webster's (IWX) 88-D Radar, and the Valparaiso University 5-cm simultaneous dual-polarized radar. The environment on 18 October had all the ingredients to produce a tornado. It was associated with a severe weather outbreak that occurred under the left-jet exit region with warm air advection taking place, deepening low pressure, a subtropical jet acting as a boundary to severe storms, a low level jet helping to aid in lift, and an approaching short-wave trough. This poster will show the environment of 18 October 2007, and how its synoptic setup was favorable for severe weather. It will also show the development of the quasi linear convective system of the Nappanee tornado separate from the several squall lines that occurred on this day. In addition, views of the tornadic storm from both the 88-D and the Valparaiso radar will be shown. Lastly, unique products of the dual-polarized radar will be shown.

Information about the Author:

Stephanie is a senior meteorology major, who studied the Valparaiso radar. This research was presented at the American Meteorological Society (AMS) Annual Meeting in Arizona. Her interests, within meteorology, are confined to radar and operational forecasting. This is why she wants to explore the different radars. Stephanie is currently an employee with the National Weather Service in Chicago, and that job allows her to fulfill her interests.

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Creating Zones of Visibility Using Geographic Information Systems

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Departmental Affiliation: Geography and Meteorology
College of Arts and Sciences

Meteorologists define visibility as the greatest distance in a given direction at which it is just possible to see and identify specific objects with the unaided eye. In the absence of calibrated instrumentation, it is vital for an observational meteorologist to have a detailed record of points to accurately record fluctuations in visibility. Geographic Information Systems (GIS) are powerful tools that can integrate, store, edit, analyze, share and display geographically referenced spatial information. The goal of this project was to utilize GIS applications in developing a visibility reference chart for analyzing changes in visibility during adverse weather conditions. Using Kallay-Christopher Hall as a centralized location, 28 surrounding unobstructed visible features, including antennas, buildings and distinct areas of vegetation were analyzed, investigated and mapped. Concentric zones of visibility ranging from 1/16th of a mile to five miles were created and a graphic of visible features was subsequently overlaid utilizing GIS features. By identifying the object on the graphic that is furthest from the observer, yet still visible to the unaided eye, a meteorologist can record the prevailing visibility. Therefore, this graphic is expected to provide a reference to meteorology students when assessing visibility, particularly during rain, snow, and fog events.

Information about the Author:

Stephanie Dunten is a meteorology major with minors in mathematics and geography. After graduation, she will be working in Wichita, KS with the National Weather Service. Her interests include radar meteorology and working with GIS. With this project, she wants to help teach students on how to measure visibility.

Faculty Sponsor: Prof. Bharath Ganesh Babu

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Life after Expiration: Appropriate Use of Restriction Enzymes in Teaching

Justin Egge

Departmental Affiliation: Biology
College of Arts and Sciences

Crucial to the understanding of modern biology is the proper use of a variety of techniques related to biotechnology. Among the many experiments in these labs, restriction analysis is one of the most common. In this project, the efficacy of expired restriction enzymes was tested. The research aimed to understand if these older enzymes are active and effective, and if they can still be used in teaching labs. Thus, the purpose of this project was to determine whether biotechnology reagents, such as restriction digestion enzymes, are still able to be used after the suggested expiration date. From the data we have collected, our results are encouraging, showing the expired enzymes still work. They indicate the potential for significant budget savings for smaller educational institutions. Currently, many departments have to continue ordering expensive restriction digestion enzymes, because the enzymes have exceeded their expiration dates. Our data indicate these enzymes can be effective long after expiration and students can still use them accurately and effectively in biotechnology laboratories. The research will also help academic institutions broaden their departments, as they can fund other types of labs to give students an enhanced laboratory understanding without stretching their budgets to the breaking point.

Information about the Author:

Justin Egge is a junior biology and theology double major from Sioux Falls, South Dakota. He plans to apply for medical school this next summer, and is seriously considering pursuing a combined M.D./Ph.D. program. His work with Dr. Scupham in this lab has helped spark further interest in research, and he plans to continue research in molecular biology.

Faculty Sponsor: Dr. David Scupham

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Connecting and Motivating Publics: The Role of Public Relations in Successful Fundraising

Meg English, Mackenna Schon

Departmental Affiliation: Communication
College of Arts and Sciences

Due to the current economic recession, many organizations are experiencing financial difficulties. General trends include growing rate of unemployment, stock market decline and less consumer spending. These fiscal circumstances now make fundraising more crucial than ever. How can public relations inspire motivation to financially contribute to fundraising efforts? This study compares four organizations to serve as unique case studies. The targeted organizations in this study include ADS Fundraising as a fundraising consulting firm, The American Heart Association as a not-for-profit, the city of Valparaiso Mayor Jon Costas as a political campaign and Valparaiso University as a private institution. A representative from each organization was interviewed about the role of public relations in specific campaign efforts. The findings concluded a strong correlation between the incorporation of public relations practices and the success of the fundraising campaign.

Information about the Authors:

Meg English is a senior public relations and sociology major. She is an active member of PRSSA, having served as the treasurer in 2008 and, most recently, as the logistics coordinator for a PR conference in Chicago, IL. Meg is also treasurer of the campus environmental group, Earthtones, and plans on pursuing a career in not-for-profit public relations after graduation. Mackenna Schon is a senior public relations major and business minor. She has been the president of PRSSA for two years as well as the event coordinator for two public relations conferences in Chicago. Mackenna has also contributed to Valparaiso University as a manager of the Phone Program and an intern for the 150th Anniversary. She is also the senior class gift chair on the senior planning council.

Faculty Sponsor: Dr. Bonita Neff

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Beyond the Volcanoes: A Community Partnership for Health in Rural Nicaragua

Tricia Erdmann, Kerstin Kost, Rebekah Schmerber, Katherine Thomas

Departmental Affiliation: Nursing
College of Nursing

Health inequities related to gender, ethnicity, socioeconomic status, and geography exist in rural Nicaragua. The purpose of this ongoing project is to improve health equity in rural Nicaragua through social transformation using community-based participatory action research. Bronfenbrenner's ecological model of human development, school health, and primary health care theories provided the framework for this research. Community-based participatory action research involves six phases: partnership, assessment, planning, implementation, evaluation, and dissemination. During the partnership phase, established partnerships were strengthened and new partnerships formed between researchers and community members. In the assessment phase, community partners developed a comprehensive community health assessment survey, which was completed by ninety community members. The goal of the planning phase was to use the data obtained during the assessment phase to develop an action plan to reach the community's health-related goals. Community health leaders and researchers engaged community members in a forum, which included three small focus groups. Results from the focus groups were used by the community to develop an action plan to address their primary health concerns through participatory educational techniques including sociodramas and poetry. Partnership through all phases provides a mechanism to engage community members in working toward a common goal - health for all.

Information about the Authors:

Tricia Erdmann is a junior nursing major with a minor in psychology. Kerstin Kost is a sophomore nursing major. Rebekah Schmerber is a senior nursing major with a minor in psychology. Katherine Thomas is a junior nursing major with a minor in Spanish. The authors are interested in the opportunity this project provides to better understand global and public health care as well as form partnerships and become involved in health care in an international setting.

Faculty Sponsor: Dr. Amy Cory

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An Analysis of a Pro Bono Triadic Relationship of Corporate, PR Agency, and Nonprofit

Alexandra Faust, Kristyn Rein

Departmental Affiliation: Communication
College of Arts and Sciences

Nonprofit organizations are established to benefit the public and legally are not allowed to make a profit. Corporate organizations are often in the position to assist nonprofit organizations through pro bono projects. However, a third partnership is often integrated into the process to form a triadic relationship. The public relations agency is the mediator between nonprofit and corporate. In this study, a triadic relationship was identified to examine the public relations functions in such arrangement. Each of the organizations was interviewed with a series of questions adapted to each organization: corporate, nonprofit, PR agency. The data focused on the following hypothesis: H1: The PR agency is critical to the partnering effort. H2: Partnering is a complex process and little studied in the public relations literature. The results indicate that there are few guidelines developed in these pro bono relationships. The public relations agencies have the most insight into the process. For example, public relations agencies are often brought in to help a nonprofit organization's promotion efforts. Some functions include creating awareness of the organization's mission; communicating effectively with key publics; developing, maintaining, and monitoring the organizations involvement and donations. Their communication functions are very important in reaching the nonprofit organizations' publics.

Information about the Authors:

Alexandra Faust is sophomore public relations major with a minor in public speaking. She is also a member of Gamma Phi Beta. This past summer she completed an internship with Novo Nordisk, and also had the chance to work with the public relations firm BioSector2. Kristyn Rein is sophomore public relations major, and has a double minor in public & corporate communications and urban studies. She is a member of PRSSA (Public Relations Student Society of America). She is also a Union Board Executive Board member (Hot Topics & Flicks Chair). Kristyn is also a member of Alpha Lambda Delta (Freshman Honor Society), LUX (Light women's service organization), and AWC (Association for Women in Communications).

Faculty Sponsor: Dr. Bonita Neff

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Water Quality in the Great Marsh Complex of the Indiana Dunes National Lakeshore and Its Relationship to Native Crayfish

Jason Feder, Joel Cook

Departmental Affiliation: Chemistry
College of Arts and Sciences

Water quality parameters were monitored during the summer. Phosphorus was also analyzed using two different procedures for total reactive Phosphorus and total dissolved phosphorus. The weather conditions on each occasion were recorded because weather changed dramatically at times and had a significant impact on the data. Each site was sampled three times during the summer and some sites were sampled after a storm event to see how rainfall influenced the parameters. Crayfish were also collected to see how parameters affected the numbers and the general health of crayfish collected. The research began in May and continued into August.

Information about the Authors:

Jason Feder is a senior chemistry major attending Valparaiso University. He has helped out with water quality analysis during his summer volunteering at the Save the Dunes Foundation. He enjoys using aspects of analytical

chemistry and applying them to practical problems. After graduation, he is planning to look at job opportunities specifically in the areas of quality assurance/quality control or research and development. Joel Cook graduated in December from Purdue University Calumet.

Faculty Sponsor: Dr. Jonathan Schoer

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Improving Patient Satisfaction Regarding Education on Resuming Sexual Activity after Having an MI, CABG, or Implanted Cardiac Defibrillator

Melanie Folino, Kristen Hart, Evelyn Jones, Ben Koch, Emily Leibenguth, Nikki Sohovich, Amanda Young

Departmental Affiliation: Nursing
College of Nursing

The purpose of this evidence based research project was to determine the best practice for ensuring effective education about resuming sexual activity post MI, CABG, or implantation of cardiac defibrillator. Although heart disease is the leading cause of death for Americans, only slightly more than one-half of cardiac nurses include sexual teaching as part of standard patient care (Steinke, 2005). Databases searched were CINAHL, ProQuest, and Medline using the key words: MI, sexual functioning, teaching, CABG, education, pacemaker, cardiac defibrillator, sexual behavior. English-written studies involving men and women having MI, CABG, or implanted cardiac defibrillator were included. Analysis showed that studies used non-probability samples and a variety of designs. Findings indicate patients are dissatisfied with education received about resuming sexual activity. We recommend requiring nurses to provide teaching that addresses resumption of sexual activity for these patients prior to hospital discharge. This decision was based on the review of literature which revealed that assessment of sexual function and education on sexual concerns would enhance the quality of life for patients and their partners. As part of the practice change, patient satisfaction with teaching methods will be evaluated prior to discharge. A process for evaluation will be implemented.

Information about the Authors:

The seven authors are traditional and accelerated nursing students who are excited to enter into the real world of nursing with the skills they received throughout their education. They are committed to nursing excellence by using research to improve patient care.

Faculty Sponsor: Dr. Nola Schmidt

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Human Freedom and Leibniz's Theodicy: Is God the Author of Evil?

Eric Gutierrez

Departmental Affiliation: Philosophy
College of Arts and Sciences

For this paper, I'll be examining G. W. Leibniz's response to the problem of evil in his 1710 word Theodicy. The problem of evil grapples with how the existence of an all-good and all-powerful God can be reconciled with the existence of real evil in the world. One of Leibniz's aims in the Theodicy is to show how human freedom is sufficient to vindicate God of blame for allowing evil to exist. His view is that, in our daily lives, the necessary conditions of human freedom "that is, the possibility that events could be otherwise (contingency), the reasoning ability of humans (intelligence) and the fact that our perceptions are self-originating (spontaneity)" are met, thus grounding the origin of evil in human acts. In my paper, I evaluate this argument and show how the third condition of freedom, spontaneity, is not met. Spontaneity fails to obtain because God actualizes each person's essence and thus determines it. Hence, a person's perceptions are not fully self-originating, and human freedom fails to obtain.

Information about the Author:

Eric is currently a junior philosophy and economics double major at VU. His interests include Aristotle, early modern philosophy, metaphysics, and ethics. After graduation, he plans on going on to graduate school in philosophy and law school. The problem of reconciling the existence of evil with God's goodness has interested him for a long time and is a topic he explores to some degree in this paper.

Faculty Sponsor: Dr. Larry Jorgensen

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Eating Disorders among College Students

Jeanette Gutierrez, Julie Milosevich, Susie Morales

Departmental Affiliation: Social Work
College of Arts and Sciences

Eating disorders have become major topics of discussion among young American adults. These young adults see it everyday in the media, young women with bodies of skin and bone, magazines who sell more because they have the latest new diet a celeb is trying. In TV shows, men are made fun of because they are too skinny or too fat and do not have enough muscles. Students across the Valparaiso University campus will be surveyed about their eating and exercise habits as well as their body image. These surveys are completely anonymous; they will determine whether or not the research done prior to the experiment has relevance to what our results will find. We hope to find the results show that women want smaller bodies than their current stature, while men strive for a larger build than their current bodies.

Information about the Authors:

Julie Milosevich has been researching eating disorders since the age of thirteen when someone close to her was diagnosed with anorexia nervosa. She has written several papers on eating disorders in order to develop a better understanding of these life-threatening illnesses. In the future, Julie hopes to counsel individuals with eating disorders. Jeanette Gutierrez is a junior at VU and is a social work major. She has an internship at Porter Starke Services, working with Adult Day Treatment and Club House. She is planning to obtain her master and possibility her Ph.D. to work with young children and pregnant mothers. Susie Morales believes that there are issues concerning the way young people view their body image which negatively contributes to their eating habits. Through this research, she hopes to provide insight into deeper reasons why eating disorders exist and educate students on campus about those negative outcomes.

Faculty Sponsor: Dr. Matthew Ringenberg

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The Evolution of Visual Symbols from a Public Relations Perspective

Courtney Gwinn, Dan Jason

Departmental Affiliation: Communication
College of Arts and Sciences

Public relations research is crucial in identifying publics to ensure decisions are made with the fullest range of discourse. Publics with a strong voice make themselves known, but it is crucial to identify the opinions of publics whom are not vocal. The Crusader mascot recently emerged, again, as a topic of controversy. To some, the Crusader represents tradition and school pride. Others struggle to overlook its historical meaning as a soldier in the religious wars and see it as offensive and inappropriate. Valparaiso established the Crusader as its official mascot in 1942. Prior to this, Valparaiso was represented by the Uhlan. This name was changed due to its offensive connotation. The Crusader mascot was originally chosen because it signifies the courage and devotion for which the University stands, and it is a constant reminder of the university's religious background. The mascot disagreement has grown beyond the name. The issue now includes the name, logo, and colors. Collectively, the resolution of these issues will dictate how Valparaiso is perceived by publics in the future. The data gathered in this research

effort focused on printed collateral, presentations, interviews, and ongoing data gathering to document the evolving practice and decision-making around VU's symbols.

Information about the Authors:

Courtney Gwinn is a junior from Evansville, IN. She is majoring in public relations and marketing. She is a member of the Chi Omega sorority and Valparaiso's women's soccer team. She is also a member of Valparaiso University's student-run Public Relations Student Society of America (PRSSA) firm, and the SPARK Crusader research team. Dan Jason is a junior Public Relations and Classical Civilization double major from Deerfield, IL. He is the current director of the Public Relations Student Society of America's student agency SPARK, VU's student-run public relations firm. He is co-chair of the Crusader research team, and former co-chair of the research team conducting the research/evaluation, promotions, and publicity for the 29th World Banquet sponsored by VISA.

Faculty Sponsor: Dr. Bonita Neff

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What Guides Embryonic Cell Migration in the African Clawed Frog (*Xenopus laevis*)?

Aaron Harter, Michael Licitra

Departmental Affiliation: Biology
College of Arts and Sciences

Vertebrate embryos all undergo gastrulation, a mass migration of cells, to produce normal adult anatomy. Three theories compete to explain gastrulation: Marching Orders: cells follow directions (three "steps" forward; turn right); Chemotaxis: cells follow a concentration gradient of a diffusible chemical; Differential Adhesion: cells move until they maximize their total adhesive energy. What does each theory predict would happen if the normal starting positions of cells were shifted before gastrulation? Marching orders depend upon the correct starting point to produce a normal result. Chemotaxis demands that the source of the chemical not move. Differential Adhesion allows random movement so long as adhesion remains unchanged. To distinguish between these, living frog embryos were gently flattened, then fixed to reveal their interior cells for the scanning electron microscope. Initially undistorted cells of the blastocoel floor quickly became stretched. However, after ten minutes of continued compression, these cells had returned to their undistorted shapes by cellular rearrangements. Such cellular movements produced embryos that were thinner (fewer cells thick) and broader (more cells long and wide) than normal. Such cellular rearrangements in compressed, unfixed embryos never impeded normal development (n of cases =17). These data support only the differential adhesion hypothesis.

Information about the Authors:

Aaron Harter is a senior biology and chemistry double major with a focus in the pre-medical arts. His future goals include attending graduate school with a concentration on research in oncology or officer candidate school. Aaron became engaged in research on amphibian embryology after becoming interested by a project in a course on developmental biology. Michael Licitra, is a member of the class of 2010. Although research in gastrulation is fairly new to him, he has learned in Modern Microscopy (Biology 360) how to take micrographs for Aaron Harter who is conducting the experiments in this project. He finds the topic of morphogenesis intriguing, and performing this research has helped develop his microscopy skills.

Faculty Sponsor: Dr. Grayson Davis

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Digging for Buried Treasure: Searching for Learning Clues in the Sand

Katie Hennessey

Departmental Affiliation: Psychology
College of Arts and Sciences

The Principles and Applications of Learning Laboratory course (PSY 251) includes opportunities for systematic investigation of behavior through instrumental and operant conditioning projects. The current study was conducted to determine the feasibility of introducing a new instrumental task (the Sand Maze Task) to the laboratory curriculum. The Sand Maze apparatus is constructed of a small plastic pool filled with a mixture of sand and crushed up Froot Loops®. Two visual cues, made of adhesive tape, were placed on opposite sides of the apparatus. One was a white circle and the other was a black cross sign. This task requires rat subjects to use visual cues to locate an object hidden under a cover of sand. Subjects must learn to dig at an appropriate location (under the black cross visual cue) to reveal a reward (pieces of Froot Loops®). The goal of the current study was to explore the parameters of the task so that course-appropriate conditions could be identified. Specifically, factors such as trial length, number of trials per day, subject feeding regimen, and depth of concealment were examined and recorded. After extensive observation, recommendations for task protocol were drafted.

Information about the Author:

Katie Hennessey is currently a second year student at Valparaiso University and majoring in psychology. Being employed as the animal caretaker in the Psychology Department, she approached Angela Vernon about an opportunity to be involved in an experiment involving the laboratory rats. This is when her research design was developed. Currently, she is working towards her B.A. in psychology in undergraduate school. She is planning on attending graduate school in the future for clinical psychology.

Faculty Sponsor: Dr. Angela Vernon

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Local Polarimetry at the STAR Project

Ansel Hillmer

Departmental Affiliation: Physics and Astronomy
College of Arts and Sciences

Currently, RHIC is making the first measurement of polarized proton-proton collisions at $\sqrt{s} = 500$ GeV. Beam-Beam Counters (BBC) have traditionally provided the polarization asymmetry measurements, but have insufficient analyzing power at higher energies. The Zero-Degree Calorimeters (ZDC) have been demonstrated by Bitters et.al. to provide polarization measurements at $\sqrt{s} = 200$. An initial analysis of the ZDC based off of a small data set from 2004 with only two of the potential four spin configurations. This project has provided a confirmation of their initial work, and is working to develop an algorithm technique to maximize the observed physics asymmetry. Multiple functionality improvements to the ZDC, including integration with scalers to provide automatic pedestal subtraction and means of automating gain correction, as well as hardware improvements such as simulating or building a hodoscope to reject charged particles have been proposed. Some of these may be taken up as well to improve the functionality of the ZDC in an effort to improve polarization measurements at STAR.

Information about the Author:

Ansel Hillmer is a senior physics and math double major with a minor in computer science. He previously worked on the STAR experiment in the summer of 2007, and is currently working on this ZDC analysis as his senior research project. He will begin graduate studies in medical physics in the fall.

Faculty Sponsor: Dr. Jason Webb

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Assessing the Global Preparedness of Public Relations Students: Attitudes and Knowledge

Ricky Hoffman, Mallory Reagan

Departmental Affiliation: Communication
College of Arts and Sciences

Stereotypes about American students and citizens lacking interest and knowledge about global affairs are unfortunate. Those who are studying public relations, however, are particularly in need of having a solid background in global issues. With all but one of the worldwide public relations agencies owned outside the country, the possibility of working for a non-American employer is very likely. This study explores the attitudes and knowledge of those who are studying public relations on the undergraduate level. Even in the area of sports, a well liked area of interest in the U.S., events do not translate well if the sport is played abroad. Thus it is crucial to establish a high standard in global awareness for those entering the public relations profession. After establishing the opinions and thoughts from the Likert scale questionnaire, the responses of the public relations students were analyzed as to year of study, gender, and major/minor. The results indicate there is a mixed feeling toward global studies. The level of knowledge is fairly high with the sense that the students are willing to be more focused on global events. One should also note the study takes place during a global economic crisis where the interconnectiveness of economies is strongly emphasized.

Information about the Authors:

Ricky Hoffman is a communication public relations major with a minor in German. He is a sophomore from Chicago, IL and is part of the Lambda Chi Alpha chapter. After college, he plans to become an international manufactured sales representative. Mallory Reagan is a junior with a public relations major and a liberal arts business minor. She is a member of Kappa Gamma sorority and PRSSA. Upon graduation, she is considering a career in public relations in the field of assisted living and retirement communities.

Faculty Sponsor: Dr. Bonita Neff

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Water Quality and Hydrology in the Cedar Creek Watershed within the PCCI Property

Alan Holderread

Departmental Affiliation: Civil Engineering
College of Engineering

The primary desired outcome of this research was a better understanding of how the Cedar Creek watershed hydrology affects the water quality of the watershed, specifically Cedar Creek, within the Pierce Cedar Creek Institute boundaries. “Best Management Practices” (BMP) of the developed stormwater hydrology on the Institute property were also examined. The effects of the surrounding hydrology on Cedar Creek seem to be limited at least during the summer months from June to August. Temperature fluctuations in the creek were greater than expected and may be of future research interest. The Institute currently employs excellent stormwater management practices. The project was intentionally general, testing for a host of water quality parameters. The large, broad scope in the first year of civil engineering participation at the institute creates a useful base for future civil engineering researchers to branch off for more focused projects at Pierce Cedar Creek Institute.

Information about the Author:

Alan Holderread is a senior studying civil engineering and a member of VU’s Social Action Leadership Team (SALT). His interests that relate to the project include environmental justice, water quality, and environmental policy. Holderread became interested in the research through his Environmental Engineering class. In September, he plans to start a graduate development program with the Indiana Department of Transportation which will allow him to work in many aspects of civil engineering.

Faculty Sponsor: Dr. Zuhdi Aljobeh

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Challenging Community: The Struggle for Integration and Acceptance in Valparaiso, Indiana, 1968-2008

Regina Hollingshead

Departmental Affiliation: History

College of Arts and Sciences

When it comes to race relations, the story of America is the story of progress. Contrary to this popular depiction, however, race relations in the United States have actually fluctuated greatly. Valparaiso, Indiana is a prime example. The city systematically excluded African Americans from its borders for decades. The story of how and why the first African Americans came to the city, as well as how the town reacted to them, brings into question the level of community that existed at that time. In order to assess that question, this work attempts two things: First, to tell the story of the 1970's integration movement in Valparaiso from the point of view of those who participated in it. Second, this is an attempt to assess the successfulness of the movement. The integration movement in Valparaiso was a struggle to bring diversity and acceptance to a closed community. The degree to which Valparaiso is integrated today shows progress, but is balanced with resistance and setbacks. The history of this movement juxtaposed with where the town stands today suggests the successfulness of the experiment, and, conversely, also offers a glimpse at a community that is still as divided as ever.

Information about the Author:

Growing up in Lake County, Indiana, segregation and race relations in Northwest Indiana have always been within Regina Hollingshead's area of interest and concern. She is in her senior year at Valparaiso University, majoring in history and secondary education. She is currently student teaching in Gary, Indiana. Hollingshead plans on developing this study further and seeking publication this summer.

Faculty Sponsor: Dr. Alan Bloom

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Assessing College Students' Attitudes toward Science: Effects of Taking a Laboratory Course and Investigating Pseudoscience

Gerald Hughes

Departmental Affiliation: Psychology
College of Arts and Sciences

One hundred ninety undergraduate students at Valparaiso University enrolled in introductory psychology were evaluated to assess their attitudes toward science. The effects of taking a laboratory course and investigating pseudoscientific claims were evaluated. Participants' attitudes toward the importance of science, the belief in scientificism, and their empirical orientation were assessed. Researchers plan to measure these constructs at the beginning of the course, right before a lab on pseudoscience, and immediately after taking the pseudoscience lab. Researchers will be able to determine how effectively students' pro-scientific views are bolstered by taking the introductory laboratory course in psychology and differentiating between science and pseudoscience. As promoting scientific thinking is a goal of the lab course, the results could lead to certain alterations and/or continuations of the approach taken by instructors when teaching the lab.

Information about the Author:

Jerry Hughes has always been inclined toward math and science throughout his academic life. He is not quite sure how this came to be, as most of his family does not care much for the sciences. So when Dr. Carlson gave Jerry the opportunity to work with him, he was excited to explore how people may come to understand science and learn the difference between science and pseudoscience.

Faculty Sponsor: Dr. Kieth Carlson

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Flooding, Drainage, and Sewer Problems in the City of Valparaiso

Chris Jackson, Kan Klosowski, Evan Korshavn, Alan Kus, Keith Liput

Departmental Affiliation: Political Science – Community Research and Service Center
College of Arts and Sciences

The City of Valparaiso's Storm Water Engineer asked the Community Research and Service Center to help the City of Valparaiso conduct and analyze a survey on problems related to the flooding that occurred in early September 2008 in the city. CRSC research associates developed a questionnaire designed to answer several questions related to the severity and type of flooding experienced by households in the city. The surveys were distributed to households along with city water bills. Respondents were allowed to complete a mail copy or were given the option of completing the survey online. A link to the online survey also was placed on the City of Valparaiso webpage. All responses were coded and keyed into a dataset for analysis, and interactive maps of responses were created. Nearly half of respondents, 48.0%, reported some type of flooding problem. Of those respondents, 31.5% reported sanitary sewer backup problems. Nearly half of the respondents reported the problems they experienced as serious or very serious. The results indicated that most of the sewer-backup problems were concentrated in the older part of the city such as near the University and downtown.

Information about the Authors:

CRSC Research Associates who contributed to this project include Chris Jackson, Dan Klosowski, Evan Korshavn, Alan Kus, and Keith Liput, all of whom are political science majors at VU. The CRSC's primary goals are to provide research assistance and other services to government, not-for-profit organizations, and businesses in Northwest Indiana, and to provide undergraduate students with applied research experience. Students, working as Research Associates, become integral parts of the CRSC and not only learn basic research methods, but gain practical experience in working for and dealing with government, business, and other organizations in Northwest Indiana. As a means of achieving these goals, the CRSC forges partnerships with various governmental units and not-for-profit organizations in Northwest Indiana. One such partnership is with the City of Valparaiso. In this instance, engineers from the City of Valparaiso approached the CRSC to request assistance with this project.

Faculty Sponsor: Dr. Larry Baas

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Strength Training Methods in Untrained Individuals

Adam Jajtner

Departmental Affiliation: Physical Education
College of Arts and Sciences

The purpose of this study is to analyze what portion of conventional strength training is more beneficial in different areas of performance. To do this, baseline readings were taken on nine subjects. These readings ranged from aerobic capacity tests to flexibility. Once these tests were complete, the subjects were split into two different groups, bodyweight (5) and added weight (4). Each group was given a specific workout for six weeks. Upon completion of the workout, each participant was tested in each of the measures of performance again to analyze improvement. Strength gains were noticed in all but two participants, one from each test group. Mean weight gain on the bench press max for each group was 6.25 lbs. per person for added weight and 3.75 lbs. per person for bodyweight. This is expected to be due to the nature of the workout regimens.

Information about the Author:

Adam Jajtner just finished his senior year of swimming. He is someone who has always enjoyed training for various sports, and since strength training is such an important aspect to most sports, it was something that has always interested him.

Faculty Sponsor: Prof. Kelly Helm

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Setting Up a Bioinorganic Lab to Study the Gas-Sensing Heme Protein CooA and Its Derivatives

Edra Jani, Rachael Steinken

Departmental Affiliation: Chemistry

Gas-sensing heme proteins regulate numerous critical functions in several forms of life. These proteins operate by undergoing an allosteric conformational change upon the binding of a small gas molecule to a heme group located within the protein. One example of these proteins is CooA, a carbon monoxide (CO) gas-sensing transcription factor found in a number of bacteria including *Rhodospirillum rubrum* and *Carboxydotherrmus hydrogenoformans*. CooA regulates gene expression in these organisms and enables growth on CO as a sole energy source. To obtain a detailed understanding of the general gas-sensing mechanism utilized by this family of proteins, experiments were performed to investigate the coordination chemistry of the CooA heme upon treatment with a non-native gaseous effector molecule. In the present work, spectroscopic studies were performed in which CooA from *C. hydrogenoformans* was treated with nitric oxide (NO). Results obtained by electronic absorption spectroscopy supported the formation of 5-coordinate Fe(II)-NO WT CooA upon treatment of the Fe(III) protein with NO. In addition, mutagenesis and spectroscopic studies suggested that S-nitrosylation of the Cys-80 residue was responsible for the formation of a 5-coordinate rather than a 6-coordinate Fe(II)-NO heme. Finally, the observation of a relatively unstable 6-C Fe(III)-NO WT CooA at early reaction times suggests a possible mechanism by which the 5-coordinate species is produced. Results of the current studies will be discussed in the context of the general sensing mechanism used by gas-sensing heme proteins. Future studies will investigate the ability of NO-treated Fe(III) CooA samples to bind DNA using a fluorescence anisotropy assay.

Information about the Authors:

Edra Jani is a junior majoring in chemistry/biology, and Rachael Steinken is a senior biochemistry major. This summer was Edra's first opportunity in a laboratory outside of class and was Rachael's second research experience. Dr. Clark's research appealed to both women due to its focus on heme proteins and the opportunities it provided. Since they are both interested in future medical careers, they were interested in working with heme proteins because they play a role in mediating numerous biological functions in living things. Their discoveries may one day contribute to drug development that exploits the chemistry of these proteins.

Faculty Sponsor: Dr. Robert Clark

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The World Banquet: Uniting Our World

Dan Jason, Zanele Kutamo, Jana Larson, Joe Miller, Alex Moulchin, Brenna Roy

Departmental Affiliation: Communication
College of Arts and Sciences

VISA, Valparaiso University's international student association, desired to increase American student involvement in the annual World Banquet. Valparaiso University's student-run public relations agency, SPARK, continued the long tradition of providing public relations support for VISA's event. The 2009 World Banquet offered a set of unique challenges. Firstly, the event was held in the new Harre Union. Therefore, the planning team encountered a unique set of logistical and planning complications. The primary difficulty in terms of promotions was the students' hesitancy to purchase tickets over a month prior to the event. Consequently, the vast majority of the promotions were executed two weeks prior to the event. The promotions strategies which yielded the greatest results were directed ticket sales at the Harre Union and targeted group ticket sales. On a promotional basis, the World Banquet was an outstanding success. The event was sold out nearly one week preceding its execution, reflecting on the amount of buzz that was generated through the promotions strategies. Student surveys collected after the event validated the outstanding coverage the event received in the local media. Overall the event reaffirmed the need to connect with students on a direct basis when promoting an on-campus event.

Information about the Authors:

Dan Jason is junior public relations major from Deerfield, IL. He is the current director of Valparaiso University's student run public relations agency, SPARK. He is the former co-chair of the World Banquet account and the current co-chair of the Crusader Research team. Jana Larson is a senior public relations and international service major. She has studied abroad in Namibia and South Africa, interning at Namibia Development Foundation. With SparkPR, she chaired the 29th Annual World Banquet. Currently, she is interning with Christina's Creative Planning and the Wedding Shoppe Directory.

Faculty Sponsor: Dr. Bonita Neff

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Topographical Effects on Tornado Genesis

Luke Kanclerz, Chris Lippold

Departmental Affiliation: Geography and Meteorology
College of Arts and Sciences

Tornadoes are one of nature's most devastating forces. Scientists have studied for decades trying to understand these complex forces of nature. We know that factors like wind shear, moisture, and lift are needed to bring about these powerful beasts, but we also know that there are other factors at work in bringing about their creation. We believe that one of these factors could be topography, and more specifically, changes in elevation. We will use ARC GIS to map tornado touchdowns, liftoffs, and tracks over United States topography to visualize possible correlations between decreasing elevation and an increased occurrence of tornado touchdowns. We will also examine if any relationship exists between tornado liftoffs and elevation change and if a tornado's strength is affected by elevation change. Areas of interest with decreasing elevation include large river valleys and the downhill sides of mountains and hills.

Information about the Authors:

Chris Lippold is a meteorology and geography major and has a strong interest in severe storms and tornadoes. He has completed studies in dynamics and thermodynamics where he has become very familiar with tornado formations. He has an interest in this topic because he's seen an increased amount of tornadoes in a specific area near his hometown and wanted to research any connections. Upon graduating, Chris would like to either pursue graduate school or a career at the Severe Storm Prediction Center. Luke is a geography major and is focusing his studies in GIS applications and remote sensing tools. Luke hopes to use skills learned from this project for a summer internship. After graduating, he is considering graduate school or finding a career in GIS. Interest in this research project was ignited from experiencing a tornado freshman year.

Faculty Sponsor: Prof. Bharath Ganesh Babu

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Characterizing the Underlying Event in Polarized Proton-Proton Collisions at RHIC

Megan Kania, Nathan Kellams, Timothy Olson

Departmental Affiliation: Physics and Astronomy
College of Arts and Sciences

The STAR experiment from Brookhaven National Laboratory is part of an ongoing effort to understand the origin of the intrinsic angular momentum of the proton called its "spin". High energy collisions between beams of protons allow scientists to study the way in which the quarks and gluons inside the proton contribute to the proton spin. Past studies have shown that only approximately one third of a proton's quantum mechanical spin is due to the combined spins of its three primary (valence) quarks. The source of the remaining spin is presently unknown. Current work includes an attempt to determine the degree to which intermediate force-carrying particles called gluons contribute to the proton's spin. In order to isolate the spin contributions from different sub-particles such as quarks and gluons, it is necessary to understand the effects of the underlying event in these particle collisions (i.e., the results of the collisions between other quarks in the proton besides the primary quark interaction). Using data collected at Brookhaven National Laboratory over the past few years, we examine the underlying event from collisions that result in a photon and quark-jet pair in order to improve current and future data analysis.

Information about the Authors:

Megan Kania is a mechanical engineering and physics major. She originally became interested in the research that STAR was conducting because it involved a real world chance to apply what she had previously learned about computer programming. Nathan Kellams is a junior physics major at Valparaiso University. He is originally from

Portage, Indiana and plans to continue on to a graduate degree in physics. During summer of 2008, he worked analyzing data for STAR and participated in the DAQ 1000 hardware upgrade after becoming interested in the project during a colloquium presentation. Timothy Olson is a sophomore pursuing a double major in physics and mathematics with a minor in computer science. He intends to pursue a graduate degree in cosmological or particle physics. His involvement with the STAR collaboration began last summer, and he has continued to research throughout this year.

Faculty Sponsor: Dr. Donald Koetke

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From Rivalry to Solidarity: Why We Love to Hate our Siblings

Kathryn Kattalia

Departmental Affiliation: Humanities
Christ College

My sisters and I are the best of friends. We share secrets, borrow clothes and giggle madly at a decade's worth of inside jokes. And yet, for the past fifteen years, the three of us have been engaged in an epic, unspoken battle to see which one of us will succeed in becoming the prettiest, smartest and most athletic. It is an ongoing struggle - one with which girls all over the world can relate. This project examines the dynamics of sibling rivalry, specifically that between sisters. From competition to camaraderie, this paper investigates the sharing and divergence of identities between sisters as it affects their individual development and sense of self. It looks at how and why competition arises between siblings and how it is further shaped and perpetuated by outside forces such as parents, businesses and schools. Research for this project, including personal interviews with sisters of all ages and origins, explores the link between sibling rivalry and self-image, assessing the ultimate power a girl has on defining not only her own identity, but her sister's as well.

Information about the Author:

Kathryn Kattalia is a junior English and new media journalism major. Her project was inspired by Professor Bill Olmsted's "Inventing the Body" class and the dynamic relationship she has with her own sisters.

Faculty Sponsor: Dr. William Olmsted

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Utilizing a Semantic Differential to Profile the Degree of Response to VU Symbols

Jackie Kenyon, Ryan Roman

Departmental Affiliation: Communication
College of Arts and Sciences

America is full of brand names and signature styles. McDonald's, Disney, Kellogg's cereal, XM radio and Sony are a few incredibly diverse examples. No matter the product, organization, or company, symbols are essential for promotional success. Symbols give the public something to identify with. Because of these factors, it is imperative to have good strategies for establishing symbols. Also it is essential for not-for-profit organizations to have established symbol recognition. Examples of not-for profit organizations with high symbol recognition include the Pink Ribbon for Breast Cancer Awareness and the Red Dress of the American Heart Association. This study focused on Valparaiso University's many symbols. Our controversially beloved Crusader takes many forms: He plays basketball, soccer, and volleyball, and he also has a classic pose used most frequently by the University. Valpo also uses the "Valpo swoosh" logo, which is our name with the letters stretched and skewed, in addition to the Valpo crest and the Valpo torch. Another aspect of symbols, often called a critical aspect, are the colors of symbols. Using a semantic differential bipolar research instrument, the students were asked to respond to the VU symbols with a series of bipolar descriptors gauging the range of response. Student responses were analyzed in terms of key variables: level of study, gender, and degree of involvement in university activities. The results provided a rich fabric of response to establish the degree of acceptance for VU's symbols.

Information about the Authors:

Jackie Kenyon is a sophomore public relations and graphic design major and dance minor. She is a member of VU's Ballroom Competitive Dance Team; Dance Ensemble; and Valpo's HipHop Crew. She is the Public Relations Chairman for VU Ballroom, and is Vice President of Finance for PRSSA, and is actively involved in Spark PR. Ryan Roman is a junior TV/radio major and public relations minor. He participated in the planning of the 2008 Festival of Voices benefit concert as well as the events of the show. He also participated in a communications audit for the Brauer Art Museum which involved coming up with strategies to better promote the museum. He also is involved with the Horizon League Network which webcasts home basketball games.

Faculty Sponsor: Dr. Bonita Neff

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The Effects of Autumn Olive (*Elaeagnus umbellata*) on Breeding Bird Nest Predation and Activity at Pierce Cedar Creek Institute

Megan Krintz

Departmental Affiliation: Biology
College of Arts and Sciences

Autumn Olive (*Elaeagnus umbellata*) is of high concern as an invasive plant, as it has now spread to every U.S. state. The purpose of this study was to gain a better understanding of how Autumn Olive changes a community. This study focused on two main aspects, nest predation and bird activity. Each method compared Autumn Olive to samples of native shrubs. The nest predation aspect focused on comparative nest predation rates using artificial nests and quail eggs; Autumn Olive did not show higher predation rates, though the type of predation event differed between ground and raised nests. The bird activity aspect measured arthropod availability and bird censuses. Comparative arthropod availability was measured via netting flying insects, trapping insects on flypaper, and branch beating to count arthropods; while flypaper showed significantly greater flying insects, the other tests showed no difference. Bird activity was measured in the early morning and daytime using point-count techniques; a significantly greater number of birds were found in native shrubs during the daytime, though not in the morning. These results suggest that birds may prefer native shrubs over Autumn Olive, even though Autumn Olive may offer a higher amount of insect food availability than the native environment.

Information about the Author:

Megan Krintz is a junior biology major. She conducted this study in the summer of 2008, funded by Pierce Cedar Creek Institute (PCCI) in Hastings, MI. Krintz has been interested in ecology and ornithology for many years, but was now able to apply her interest toward a goal of invasive species research, and now plans on working in ecology and conservation post-graduation.

Faculty Sponsor: Dr. Laurie Eberhardt

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Geographic Information System Analysis of the Coastal South Carolina Special-Needs Population

Elizabeth Thompson, Richard Krupar III

Departmental Affiliation: Geography and Meteorology
College of Arts and Sciences

There is a pressing need for assessing the vulnerability of special-needs populations for events such as natural hazards, especially storm surges along the coast of South Carolina. Geographic Information System (GIS) is a powerful spatial analysis tool that is of increasing importance in such studies. Our research intends to define the special-needs population and utilize GIS to analyze the spatial distribution of those populations based on census data. We will compare their geographic extent and density in the coastal counties of South Carolina with hurricane

evacuation routes. We will assess the apparent risk faced by this population, relative to defined hurricane storm surge zones. Collaboration with South Carolina local and state directors of the Department of Emergency Management and the Department of Health and Environmental Control will foster the creation of a relevant GIS to answer important questions concerning the spatial context of vulnerability in the coastal counties. The outcome of this GIS analysis is intended to lay pioneering groundwork for relevant government agencies in South Carolina to improve current hurricane mitigation and evacuation techniques.

Information about the Authors:

Conducting a capstone project for the semester is required by GEO-415. After taking GEO-215 last semester, the authors were skilled enough in Geographic Information Systems (GIS) to conduct any project they desired. Coastal South Carolina is a highly visited and densely populated area, exploited to many potential hazards, such as hurricanes. Having witnessed the destruction and rebuilding after hurricane Katrina first hand, both Elizabeth and Richard were inspired to pursue a project that focused on special-needs populations in South Carolina. Acknowledging time constraints, Elizabeth and Richard decided to define the special-needs population along the South Carolina coast and utilize a Geographic Information System to analyze the spatial distribution of those populations based on census data. By conducting this research project, they wish to lay pioneering groundwork for relevant government agencies in South Carolina, improve current hurricane mitigation and evacuation techniques, and embrace the lives of the vulnerable population.

Faculty Sponsor: Prof. Bharath Ganesh Babu

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The Super Tuesday Tornado Outbreak from February 2008

Richard Krupar III, Amber Reynolds, Tanya Brown, Anneley McMillan, Daan Liang, J. Arn Womble

Departmental Affiliation: Geography and Meteorology
College of Arts and Sciences

The Super Tuesday tornado outbreak that occurred on February 5-6, 2008 destroyed the lives of many people in the South. An unprecedented 62 fatalities were confirmed in Arkansas, Mississippi, Alabama, Tennessee, and Kentucky. In comparison to storm outbreaks of the past, the Super Tuesday tornado outbreak is considered the most deadly outbreak since the May 31, 1985 tornado outbreak that impacted parts of Ontario, Ohio, Pennsylvania, and upstate New York. This research used the Visualizing Impacts of Earthquakes with Satellites (VIEWS) system developed by ImageCat, Inc. to collect damage data from Madison and Macon counties in Tennessee. The results are resolved from a small sample of an entire data set obtained during a four-day ground survey in Tennessee. The Enhanced-Fujita (EF) Scale damage ratings were assigned accordingly to every fourth photo along the path of data collection, providing building-specific damage assessments that corresponded to various wind speeds. Preliminary results suggested damage in Madison County was not as prolific as damage incurred in Macon County. Future analysis will involve an in-depth examination of tornado damage that focuses on meteorological storm characteristics to increase building resistance and community resilience, in an attempt to alleviate long-term losses.

Information about the Authors:

Richard Krupar chose to work on this dataset during his internship at Texas Tech University because he wanted to look at meteorology from a different point of view. His computer skills developed over time at Valparaiso University supplemented his work, as he had to use Google Earth as his main platform to display GPS tracks and high definition damage photos. Amber Reynolds, Tanya Brown and Anneley McMillan collected the data and he would like to thank them for the opportunity to work on their research. The results of the summer research were displayed on a poster at the Natural Hazards Workshop in Boulder, CO in July 2008 and the American Meteorological Society Meeting in Phoenix, AZ this past January.

Faculty Sponsor: Daan Liang of Texas Tech University

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The Effect of China's Efforts to Reduce Pollution for the Olympics on Air Quality in Japan

Brian Lehmann, Sara Christensen, Ted Pietrzak, Nathan Kellams

Departmental Affiliation: Geography and Meteorology, Physics and Astronomy
College of Arts and Sciences

China's industrialization has impacted air quality in the region. Last summer's Olympic Games, and China's efforts to temporarily reduce pollution provides us with the opportunity to examine the effects of pollution from China on Japanese air quality. Data from Japan's National Institute for Environmental Studies and data provided by Dr. Gary Morris will be examined to determine the degree of the effect.

Information about the Authors:

Sara Christensen is currently a junior meteorology major from Bettendorf, Iowa. After graduating, Sara looks forward to attending graduate school in order to find her niche in the field and is interested in pursuing a career in climate-oriented research. Brian Lehmann is a junior meteorology major from Portage, Indiana. He is a member of the Storm Intercept Team, and participated in last summer's convective weather field study. He is looking forward to continuing to study meteorology in graduate school. Ted Pietrzak is a junior meteorology major originally from Edwardsburg, Michigan. He is involved in various groups on campus, mostly relating to environmentalism and social justice. After college, Ted would like to pursue a career in the environmental field. Nathan Kellams is a junior physics major at Valparaiso University who is originally from Portage, Indiana. He has participated in other physics research opportunities at Valparaiso, but this is his first year working in the atmospheric field.

Faculty Sponsor: Dr. Gary Morris

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A Savage Mountain Man and Clever Irony: A Humorist's Social Commentary in Adventures of Huckleberry Finn

John Linstrom

Departmental Affiliation: English
College of Arts and Sciences

This presentation explores the discovery of a previously unacknowledged cultural reference in Adventures of Huckleberry Finn to the western mythology of the notorious Liver-Eating Johnson, a mountain man who purportedly held a personal vendetta against the Crow Indian people and who was said to eat the raw livers of his victims to complete the revenge slaying. Huck's fib when speaking to the boy at Pikesville that Jim is a frightening figure who had "said if I hollered he'd cut my livers out" becomes significant when one realizes that the true savage in the example is not the (fictional) Negro Jim, but rather a real white man who was alive at the time and whose victims were those who would have popularly been labeled savage. As he so often does, Twain reverses stereotypical racial roles through subtle irony and humor and identifies a dangerous romanticism in white American culture as more threatening than the unrealistic fear of the "savage." Biographical research into the lives of Twain and Johnson indicates that Twain was undoubtedly aware of the Liver-Eating mythology and that this reference was intentional.

Information about the Author:

An undergraduate English and humanities double major at Valparaiso University, John Linstrom is interested in the use of humor in literature to communicate weighty and important messages. He wrote the essay behind this presentation after accidentally finding the Liver-Eating connection in Dr. Owens's American Literature class. Having travelled and studied in Namibia and South Africa, he is also keenly interested in studies of race relations, and has enjoyed intersecting these interests through research.

Faculty Sponsor: Dr. David Owens

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Human Goodness and the Morals of Motion in As I Lay Dying

John Linstrom

Departmental Affiliation: English
College of Arts and Sciences

As *I Lay Dying* is a novel built around the complexity and uniqueness of human characters, and is often interpreted as an observation of the ambiguity of human nature, good and evil. This project explores another view - that through the presentation of complex and believable characters, Faulkner makes a moralistic statement more in keeping with the view presented in his 1950 Nobel Prize acceptance speech, that "man will not merely endure: he will prevail." Through the irresistible tendency to motion rather than stasis, *I Lay Dying* presents a humanity destined for a shared trajectory towards the good, a shared quest. This theory is explored especially through a comparison between characters Jewel, Addie's action-driven savior, and Darl, the static, clairvoyant character who does not rightly deserve the title "human." Realistic ambiguity remains, however, since ultimately it would be impossible to identify either Darl or Jewel as good or evil. The important thing is that, in the end, despite the characters' inherent brokenness, the quest is fulfilled and the characters do not merely "endure" the flood and the fire, but "prevail." Research is focused primarily on a close reading of the novel in conjunction with the Nobel Prize speech.

Information about the Author:

An undergraduate English and humanities double major in Valparaiso University's Christ College, John Linstrom is interested in the discussion of human nature in great fiction. He wrote the essay behind this presentation in Dr. Owens's American Literature class, after frustrations with the popularity of pessimistic readings of this dark text. He will be presenting this essay at NCUR this spring, and hopes to pursue his literary interests in graduate school.

Faculty Sponsor: Dr. David Owens

Student Contact: linstrom.no.d@gmail.com

Ideal Locations for Storm Chasing in the Central United States

Jessica Liptak, Derek Stratman

Departmental Affiliation: Geography and Meteorology
College of Arts and Sciences

Over the last several years, storm chasing has grown into a hobby for amateurs, and business for storm chase tour groups. However, its importance as a research tool is critical for severe weather scientists. Successful storm chases depend not only on atmospheric conditions, but on the geographic location of storm development. The purpose of this study is to determine optimal storm chasing locations in the central United States using Geographic Information Systems (GIS). Spatial analysis will be performed on six variables: road density, canopy cover, population density, slope of terrain, density of gas stations, and tornado climatology. To help determine the relative importance of each variable, twenty-nine individuals with previous storm chasing experience will be surveyed. They will rank each variable on a scale of 1 to 6, with 1 being the greatest deterrent to storm chasing. A Boolean analysis will then be performed to assign values to each variable. They will be divided into five sub-categories, and a spatial overlay will be performed in GIS. An optimal storm chase map will be generated, accounting for locations that experience at least one tornado per year, dense road networks, flat terrain, low population densities, high gas station densities, and low tree densities.

Information about the Authors:

Jessica Liptak is a senior meteorology major. While she enjoys many aspects of weather, her interest in meteorology stems from a love of severe storms. She plans to attend graduate school at the University of Utah and study large-scale stratospheric processes. Once she completes her M.S. in atmospheric science, she will either pursue her Ph.D., or go into private sector meteorology. Derek Stratman is a senior meteorology major with a mathematics minor. He took an interest in the project due to his love of storm chasing. Stratman plans to attend graduate school after receiving his B.S. degree in meteorology from Valparaiso University and seek his Ph.D. in meteorology after earning his M.S. degree. After graduate school, he will likely conduct research in either the academic or government sector of atmospheric science.

Faculty Sponsor: Prof. Bharath Ganesh Babu

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The Identification of Individual Bullets in the Jets of SS 433 and Relation to the Kinematic Model

Erin Lueck

Departmental Affiliation: Physics and Astronomy
College of Arts and Sciences

I am studying hydrogen lines in the spectrum of the binary star SS 433. The lines come from a pair of jets in the system that eject “bullets” of material, which decay in brightness over time. Often these lines overlap, so I needed to separate them in order to compare them to the theoretical model of how the jets behave. The techniques that I used to more accurately identify the lines provided a good fit to the model.

Information about the Author:

Erin Lueck is a senior physics and music major. She started this project when she was a summer research assistant at the VU observatory. She presented this poster at the 213th meeting of the American Astronomical Society in January 2009.

Faculty Sponsor: Dr. Todd Hillwig

Student Contact: erin.lueck@valpo.edu

Preliminary Investigation of a Solar Process for Producing Mg from MgO

Leanne Matthews, Karl Stathakis, Max Liedl,
Paul Wolf

Departmental Affiliation: Electrical and Mechanical Engineering
College of Engineering

We designed and built an experimental platform for studying a high temperature electrolytic process for producing Mg from MgO. The platform uses the Mechanical Engineering Department’s high temperature electric furnace as the high temperature energy source. The furnace wraps around a reaction chamber that is essentially a long mullite tube. The reaction chamber can support operating temperatures near 1800 K with a 1 bar argon atmosphere. The chamber houses our electrolytic cell: graphite crucible, Mo cathode, and Pt. anode. The electrolyte is 3 weight percent mixture of MgO in MgF₂. The cell is instrumented for measuring cell current, applied voltage, and cell resistance. The apparatus allows for the collection of Mg and thus a measurement of the cell’s current efficiency. These electrical and mass measurements will be used to assess the potential of using concentrated sunlight as the thermal energy source for the electrolytic production of Mg. Our initial goal is to show that we can reliably produce Mg with electrical inputs near the thermodynamic minimum required voltage and that we can successfully recover the produced metal.

Information about the Authors:

The authors are engineering students interested in researching and participating in the development of renewable-resource technology. They are sophomores and juniors in the College of Engineering. They are all pursuing bachelor's degrees in mechanical or electrical engineering.

Faculty Sponsor: Dr. Robert Palumbo

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Body and Mind as One: An Exploration of the Effects of a Dualistic View of the Body and Mind in Relation to Music Pedagogy and Performance

Paula Maust

Departmental Affiliation: Music
College of Arts and Sciences

Music-making – playing an instrument or singing –requires the use of the body and the mind. In musical discussions, the issue of one’s view of the body in relation to the mind is frequently unmentioned. Yet at the root of who we are as musicians, lies the view that we have of ourselves and our bodies, which impacts the way that we learn, teach, and perform. One premise for the way many view the body is strongly linked to the concept of dualism and the separation of mind and body developed by René Descartes. This separation often results in the elevation of the mind, the debasement of the body, and an incorrect view of the mind and body as needing to work independently. These perceptions can cause an array of problems in music pedagogy and performance. This research examines the dualistic view, contrasts it with the principles of mind-body integration, and explores ways in which a dualistic approach to music pedagogy and performance hinders movement and rhythm, body image, expressiveness, and confidence. For healthy and effective performance, the mind and body must work in a balanced and inter-dependent relationship, yet still be viewed and valued as unique entities.

Information about the Author:

Paula Maust is a senior church music/organ performance major. As an active performer and scholar, she is interested in the connection between philosophy, psychology, and effective musical performance. Last fall, she completed this research in a music pedagogy seminar taught by Dr. Stacy Maugans. Paula also practices innovative teaching techniques with her private piano and organ students. In the fall, she will be attending graduate school to pursue a Master of Music Degree in Organ Performance.

Faculty Sponsor: Dr. Stacy Maugans

Student Contact: paula.maust@valpo.edu

Light and Variability in Seven Bright Proto-Planetary Nebulae

Ryan B. McGuire, C.M. Steele, Bruce J. Hrivnak, W. Lu, D. Bohlender, C.D. Scarfe

Departmental Affiliation: Physics and Astronomy
College of Arts and Sciences

We present new contemporaneous light and velocity observations of seven proto-planetary nebulae obtained over the past two years. Proto-planetary nebulae are objects evolving between the AGB and planetary nebula phases. In these seven objects, the central star is bright ($V=7-10$), surrounded by a faint nebula. We knew from past monitoring that the light from each of these varied by a few tenths of a magnitude over intervals of 30-150 days and that the velocity varied by ~ 10 km/s. These appear to be due to pulsation. With these new contemporaneous observations, we are able to measure the correlation between the brightness, color, and velocity, which will constrain the pulsation models. This is an ongoing project with the light monitoring being carried out with the Valparaiso University 0.4 m telescope and CCD camera and the radial velocity observations being carried out with the Dominion Astrophysical Observatory 1.8 m telescope and spectrograph. This research is partially supported by NSF grant 0407087 and the Indiana Space Grant Consortium.

Information about the Authors:

All throughout his life, Ryan McGuire found himself looking at the stars. When he came to Valparaiso University as an undergraduate in 2006, he knew he wanted to be part of a research group in astronomy. Ryan decided to study proto-planetary nebulae because they are a very small phase in a star’s lifecycle.

Faculty Sponsor: Dr. Bruce Hrivnak

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Exploring Student Perception of the VU Honor Code: Creating an Instrument for Valid Assessment

Thomas Miller, Alysse Foster

Departmental Affiliation: Psychology
College of Arts and Sciences

The study's primary objective was to examine student perception of the purpose of an academic honor code. Schools with an honor code may view the code as a distinguishing institutional feature and as a statement of the expectations for moral character of its students. However, students in the school may hold different views; particularly regarding the scope and implementation of the code. In the current study, researchers sought to describe student perception of an honor code's purpose. Moreover, an examination of various student characteristics (e.g., academic program, class year) was conducted to reveal potential relationships between individual participant characteristics and honor code perception. The intention of the current study was to develop an instrument examining students' perceptions of the honor code. Specifically we sought to measure characteristics such as toleration of cheating, effectiveness of the honor code, self perception of cheating, perception of others' cheating, and personal ethics. Interestingly, these variables correlated to one another to differing degrees. These results raise important questions about student perception, endorsement, and advocacy of Valparaiso University's Honor Code.

Information about the Authors:

Thomas Miller is currently a senior psychology major with minors in philosophy and humanities at Valparaiso University. At graduate school, he will be pursuing a doctorate of psychology in the field of serious mental illness and psychopathology. Alysse Foster is a junior psychology major with a minor in creative writing at Valparaiso University. She currently holds a position as a research and teaching assistant in the Psychology Department. In the future she plans to continue her education at graduate school pursuing a Masters degree in school psychology.

Faculty Sponsor: Dr. David Simpson,
Dr. Angela Vernon

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A Study on Key Differences and Strategies Used in European and United States Public Relations

Kiersten Moffatt, Erin Haberman

Departmental Affiliation: Communication
College of Arts and Sciences

This study investigated public relations tactics and strategies from different international viewpoints. Global public relations, either as agencies or departments, is established in every country. With complex cultural differences, it is imperative that public relations practitioners review the body of literature in global public relations. Students of public relations must also understand all major public relations agencies in the United States, except for one independent agency, are owned by another country. Literally, any PR professional working in a large global agency is working for leadership outside the United States. Second, as more and more public relations graduates are seeking master degrees in public relations outside the United States, it is important to incorporate the views of those former VU grads who are now studying at a non-U.S. university. A series of instruments relying on close-ended questionnaires, Likert scales, and other similar survey instruments were developed to assess the current practice of PR in regard to global and cultural concerns. The data was gathered from both the U.S. PR programs and the abroad PR programs in universities covered both undergraduate and graduate students. The questions focused on information awareness and attitudes. The results reflected the need for more study on how to approach these topics. The findings suggest research should be continued on an ongoing basis as students' progress through their programs.

Information about the Authors:

Erin Haberman is a senior public relations major and human biology minor from Canton, Ohio. As a student at Valparaiso University, she is involved in PRSSA as the Student PR Agency Coordinator, a member of Association for Women in Communication, Lambda Pi Eta Communications Honor Society, and Habitat for Humanity.

Kiersten Moffatt is a senior public relations major from Fishers, Indiana. As a corporate public relations intern, Kiersten learned to love and appreciate the mutually beneficial relationship public relations creates between community publics. She is programming chair for Public Relations Student Society of America, a client chair in SPARK PR Student Agency, executive publicity chair for Valparaiso University Union Board, a member of

Association for Women in Communication, and a member of Lambda Pi Eta Communication Honor Society and Gamma Phi Beta.

Faculty Sponsor: Dr. Bonita Neff

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Taking Up One's Cross: Christianity's Use of Its Most Recognized Symbol for Its Justification of War

Stephen Molnar

Departmental Affiliation:
Christ College

The cross is arguably the most recognizable symbol of the Christian faith. Its metaphorical propinquity to Christianity is so pronounced that its presence and use affect people's perception of the religion. Implementing both primary and secondary sources, this paper traces how this powerful symbol was materially and theologically utilized at key times to justify a particular stance on war. The paper focuses on four specific instances. In Athanasius' Life of Antony, the cross is employed in spiritual warfare in the early church which forsook physical violence. Constantine's vision of the cross, which he used as a battle emblem at the Milvian Bridge, not only transformed Christianity but left theologians with the problem of justifying war. In the eleventh century, these doctrines were stretched by Pope Gregory VII, who, using his ecclesiastical power, attempted to create the Lord's army under the banner of the cross. This set the groundwork for Urban II's call for the First Crusade, which used the cross for the outward symbol of the Crusader's vow. This paper shows the power and plasticity of the cross's symbolism in justifying war and ultimately asks what agendas are being justified by this symbol in our modern world.

Information about the Author:

Stephen Molnar is a senior geography and music major from San Luis Obispo, California. In the 2008-2009 academic year, Stephen also presented research on Bach's Cantata 75 at the Bach Institute and Columbus and the flat earth myth at the Christ College Student Scholarship Symposium. He is the principal violist in the Valparaiso University Symphony Orchestra and presented a senior recital in March 2008. He hopes to continue his study of geography in graduate school.

Faculty Sponsor: Dr. Scott Huelin

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Landscape Fragmentation and Corridor Analysis of Valparaiso University's Campus

Chris Nichols

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Urban development has led to significant habitat fragmentation, which typically affects native fauna by compromising their basic requirements of food, shelter, and cover. In urban environments, entities such as campuses and cemeteries act as excellent habitats. However, prudent landscape planning is critical in making such entities wildlife friendly. The purpose of this study was to assess habitat fragmentation on Valparaiso University's campus and to recommend potential improvement in habitat corridors that may provide wildlife with the three basic needs mentioned earlier. Geographic Information Systems (GIS) were used to digitize campus features and to analyze the extent of fragmentation and habitat locations on campus. Recommendations were made for creating vegetation corridors which may connect and increase the effectiveness of habitats. Research will continue into the summer of 2009 to finalize corridor designs and to determine different native vegetation species that may be strategically planted to make the campus wildlife friendly.

Information about the Author:

Chris Nichols is a senior geoscience major from Valparaiso, IN. He is working on this study as a project for GEO 415, Advanced Geographic Information Systems.

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Exploring the Relationship between Alcohol Consumption and Happiness

Krissy Noren, Lisa Ellens

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Alcohol is a big part of college students' lives and many students feel as though drinking alcohol will make them happier. This is a dangerous message that students are learning from the media and other sources. It is hypothesized that in reality, the higher the level of alcohol consumption, the lower the level of one's happiness will be. In other words, levels of alcohol consumption will have a negative relationship with levels of happiness. Research has shown that nearly half of college students consume beer at least once per week and over half reported drinking five or more beers on average at any one time (Coll et. al 2008). This study surveyed traditional students at Valparaiso University. Approximately 150 students comprised the representative sample of students at small private Midwestern colleges. In order to assess students' levels of happiness, the subjective happiness scale by Lyubomirsky was used as well as other questions relating to alcohol consumption. It was expected that students who consume more alcohol will be less happy, and students who consume less alcohol will be happier. The results have implications regarding alcohol use by students and could be applied to alcohol awareness or education on college campuses.

Information about the Authors:

Krissy Noren and Lisa Ellens are both junior level social work students at VU. They are both members of Pi Beta Phi sorority and are on the executive board. They both hope to graduate in May 2010 and pursue careers in the social work field. They chose this topic because alcohol is prevalent on all college campuses and is an important issue to most college students. They hope that this research will be useful in designing future alcohol education programs.

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Vertical Transmission in Epidemic Models of Sexually Transmitted Diseases with Isolation from Reproduction

Tim Olson, Adam Shull, Thomas Patrick

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We describe a population logistic model exposed to a mild life-long sexually transmitted disease, i.e. without significant increased mortality among infected individuals and providing no immunity/recovery. We then modify this model to include groups isolated from sexual contact and analyze their potential effect on the dynamics of the population. We are interested in how the isolated class may curb the growth of the infected group while keeping the healthy population at acceptable levels. In particular, we analyze the connection between vertical transmission and isolation from reproduction on the long term behavior of the disease.

Information about the Authors:

Timothy Olson is a sophomore physics and mathematics double major with a minor in computer science. He intends to pursue a graduate degree in cosmological or particle physics. Mathematical biology is a new field for him, but the mathematical techniques used for analysis are very interesting and applicable to his future work. Adam Shull is a third-year student pursuing majors in mathematics and computer science and a minor in humanities. Upon graduating from VU, he plans to attend graduate school and pursue a Ph.D. in mathematics. He enjoys doing math

research and has done work in a variety of mathematical areas. Thomas Patrick is a freshman at Valparaiso University, majoring in meteorology and doubling in math. He took several AP courses in high school including AP Calculus and AP Stats. Upon entering VU, he received a letter saying that he could apply for this independent research study in mathematics, and he took this opportunity to apply for the class.

Faculty Sponsor: Dr. Daniel Maxin

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Simulating Energy Deposition in the STAR Endcap Electromagnetic Calorimeter

Timothy Olson

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The STAR experiment from Brookhaven National Laboratory is part of an ongoing effort to understand the origin of the intrinsic angular momentum of the proton called its "spin". High energy collisions between beams of protons allow scientists to study the way in which the quarks and gluons inside the proton contribute to the proton spin. The Endcap Electromagnetic Calorimeter (EEMC) is part of the STAR detector and was designed to detect photons produced in the proton collisions. Comparisons of the fraction of the photon's energy collected in the EEMC as obtained in data and in simulations show a discrepancy. Past simulations have determined that the detector should capture approximately 4% of an incident particle's energy. However, physical observations with data have found 5% of the energy is deposited. That 1% difference in energy can have significant consequences for the subsequent reconstruction of particle collisions. In order to improve the simulations, we construct a new model of the EEMC. This model reveals that up to a third of the energy discrepancy may be caused by variation in the width of the physical detector materials within the specified machining tolerances.

Information about the Author:

Timothy Olson is a sophomore pursuing a double major in physics and mathematics with a minor in computer science. He intends to pursue a graduate degree in cosmological or particle physics. Tim began research with the VU Physics Department last summer where he analyzed underlying event characteristics in the STAR experiment. His work has also included the assembly of a small computing cluster for distributed processing of STAR physics simulations.

Faculty Sponsor: Dr. Jason Webb

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CREATE: A Case Study in International Service Learning

Sarah Ott, Zuhdi Aljobeh

Departmental Affiliation: Civil Engineering
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A team of Valparaiso University civil engineering students and a faculty member undertook a service-learning project in Costa Rica that would enrich their lives as well as the lives of residents of a Nicaraguan immigrant community in a suburban area of San Jose called Pavas. The Valparaiso University team assembled under the name Team CREATE (Costa Rica Endeavor: Aid Through Engineering). Team CREATE had a three prong project: to design and construct a 500-ft access road for a young girl with spina bifida who lives with her family in Pavas, to build successful working relationships with the University of Costa Rica Civil Engineering Department students and faculty, and to learn more about Costa Rican and Nicaraguan cultures.

Information about the Authors:

Sarah Ott is a senior civil engineering student at Valparaiso University. She will be graduating in May 2009. She plans on attending graduate school at North Carolina State University to pursue a Masters degree in transportation. Dr. Zuhdi Aljobeh, P.E. is an associate professor of civil engineering at Valparaiso University. His teaching,

research, and practice are in the areas of environmental engineering and stormwater management. He has worked on many commercial development stormwater management projects, industrial air pollution monitoring and control projects, agricultural waste odor control, environmental site assessments, and remediation.

Faculty Sponsor: Dr. Zuhdi Aljobeh

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Senior Honors Study in the Development of Flow and Deformation Model

Sarah Ott, Zuhdi Aljobeh

Departmental Affiliation: Civil Engineering
College of Engineering

Engineers face great uncertainty determining the source of discharge when designing hydraulic barriers (liners) underneath solid and hazardous waste landfills. During construction of landfills, hydraulic barriers are placed at optimum moisture content, typically 80-90%, and this moisture can create initial discharges as the cells are filled and loaded. If collection systems detect flow, the fluid source can either be initial discharges from the compression of the clay liners or leachate leaks from the solid and hazardous waste. To investigate the solution in determining the source of discharge, either leachate or initial discharge, the engineer has to understand the behavior of fluid flow through the hydraulic barrier. Research was conducted to determine characteristics of hydraulic barriers to enable development of a visual representation. Realistic geometries and boundary conditions were examined to develop a Galerkin finite element model to simulate fluid flow through and deformation of liners. SolidWorks, a three dimensional CAD software, was used to develop a model of a typical landfill cell using the researched data. The cell was 200m long containing a longitudinal slope of 1.5%. The side slopes were 3:1. The cell included a primary LCR, primary FML, secondary LCR, and secondary FML.

Information about the Authors:

Sarah Ott is a senior civil engineering student at Valparaiso University. She will be graduating in May 2009. She plans on attending graduate school at North Carolina State University to pursue a Masters degree in transportation. Dr. Zuhdi Aljobeh, P.E. is an associate professor of civil engineering at Valparaiso University. His teaching, research, and practice are in the areas of environmental engineering and stormwater management. He has worked on many commercial development stormwater management projects, industrial air pollution monitoring and control projects, agricultural waste odor control, environmental site assessments, and remediation.

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The Four PR Ps of Event Strategies: Publicity, Publics, Promotion and Planning

Katie Pianki, Brenna Roy

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Musical concerts are complex to develop and often those executing an event do not take time to properly evaluate the public relations efforts. However, when one does evaluate properly, the data will provide evidence to enhance future opportunities for similar projects. Communications around musical events reflect the Robert Heath model of public relations involving publicity and promotions. The model pinpoints five main strategies when planning an event, three of which are ones we are focusing on. These three are promoting, planning and publicizing with a strong connection with publics. Our study involved developing a questionnaire to distribute to around 50 VU students. The questionnaire consisted of questions asking the students' opinion about Union Board events (participation) and opinions on how properly the event was executed. The second stage of the research involved conducting interviews with Union Board staff. Our results confirmed the issues regarding event planning by the VU Union Board staff. Recommendations focused on implementing the four PR Ps of Event Strategies. Interview results established the commitment of the Union Board toward improving events. However, by focusing more fully on the four PR Ps, the

Union Board is more likely to address the issues established by the research effort.

Information about the Authors:

Brenna Roy is a freshman public relations major and music minor from Medina, Ohio. On campus, she is involved with Public Relations Student Society of America (PRSSA), SPARK PR, the Bateman Campaign, Chorale, and Kappa Delta. After college, Brenna hopes to be able to combine her love of music with her career in Public Relations. Katie Pianki is a junior public relations major with a music minor from Anderson, Indiana. She is involved in Kappa Delta with three positions, Public Relations Student Society of American (PRSSA), Union Board, Traditional Events Committee and Concert Committee as well as working as a server off campus.

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The Impact of Valparaiso University's Study Abroad Programs on Students' Worldviews

Whitney Pollatz, Jodi Naumann

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The aim of the research study was to determine whether studying abroad impacts students' worldviews. It is hypothesized that semester long study abroad programs in either England or Germany will impact the students' cross-cultural awareness by increasing their open-mindedness towards, acceptance of, and respect for foreign cultures. The participants will be asked to complete a survey reflecting back on their opinions before the trip as well as their views after studying abroad. These scores will then be compared and analyzed to discover the impact of the study abroad programs on students' worldviews. A sample was obtained from approximately 60 male and female undergraduate students who studied abroad. These students were enrolled at Valparaiso University and participated in a semester long program in either Cambridge, England or Reutlingen, Germany. The students studied abroad for the spring of 2007 or the fall of 2008 semesters. The survey measured the four following constructs: the potential for one to remain positive in new experiences and environments; students' open-mindedness to new cultures and ideas; the ability to interpret communication styles across cultures; and the capacity to maintain one's personal identity while experiencing and respecting different cultures.

Information about the Authors:

Whitney Pollatz is a senior social work major, dance minor from Green Bay, Wisconsin. Currently, Whitney is interning with the social worker at Porter Hospital Valparaiso Campus. Jodi Naumann is a junior social work major from New Berlin, Wisconsin. Jodi is currently interning at Opportunity Enterprises with the Supported Living Department. Whitney studied abroad in Cambridge, England in the spring of 2007. Jodi studied in Reutlingen, Germany in the fall of 2008. Both researchers have personally undergone a change in worldview after studying abroad and felt a desire to research if other's who have studied abroad had similar changes in their cross-cultural awareness.

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Validation of Positive and Negative Beliefs about Rumination Scales

Catherine Renken, Ashley Funk

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Rumination is a class of conscious thoughts that revolve around a common instrumental theme and that recur in the absence of immediate environmental demands requiring the thoughts. (Watkins, 2008). It is thought that the beliefs one has about their own ruminating have a role in maintaining depression. Two scales have recently been developed to assess metacognitive beliefs about rumination. Specifically, Papageorgiou and Wells developed scales to assess

both positive (PBRS) and negative (NBRS) beliefs about rumination. The reliability and validity of these scales has been tested in several recent studies (Papageorgiou & Wells, 2001; Papageorgiou, & Wells, 2003; Roelofs et al., 2007; Watkins, & Moulds, 2005), though far less is known about the PBRS than the NBRS. The goal of this study is to further establish the validity and reliability of these scales. One hundred-eighteen undergraduate students enrolled in a general psychology course at Valparaiso University served as participants. As part of another experiment, participants completed several questionnaires as well as the PBRS and NBRS. Both scales had acceptable internal consistency as demonstrated by Cronbach's alphas of: PBRS $\alpha = .94$, NBRS subscale 1 $\alpha = .79$, NBRS subscale 2 $\alpha = .74$.

Information about the Authors:

Catherine and Ashley are both senior psychology majors. They have worked with Dr. Winquist on her research addressing different measures of depression. Both Catherine and Ashley plan on attending graduate psychology programs in the fall.

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Recycling in Relation to Political Ideology, Environmental Concern, Knowledge and Beliefs

Christina M. Roberts

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A questionnaire measuring liberalism, environmental concern, recycling procedural knowledge (e.g., recycling bin locations), reasons for recycling (e.g., decreased landfill use), reasons for not recycling (e.g., no storage space), and self-reported recycling was administered to 75 undergraduate students. Based on responses to the item, "I regularly use the recycling bins in my dormitory," respondents were classified as recyclers or non-recyclers. Differences between these two groups on the other variables were examined using t-tests, and correlations were computed among all variables for the entire sample. Recyclers were more liberal and had greater environmental concern and knowledge than non-recyclers. Recyclers and non-recyclers did not differ in belief in global warming or importance of recycling, but non-recyclers attached greater importance to reasons for not recycling than did recyclers. Procedural knowledge was the strongest correlate of recycling, and liberalism, environmental concern, beliefs and recycling importance were interrelated. The equal importance of perceived reasons to recycle, but greater importance attached to reasons not to recycle by non-recyclers, suggests that efforts should focus on overcoming perceived barriers to recycling, rather than reiterating reasons to recycle. The interrelationships between liberalism, environmental concern, belief in GW and importance of recycling suggest a cluster of cognitive and affective dispositional variables as predictors of environmentally-responsible behavior.

Information about the Author:

Christina Roberts is a senior obtaining her B.A. in Psychology. She is an active member in Psi Chi, Sigma Alpha Iota, Mortar Board, and Christ College. Further, she participates in the theater/music department at VU.

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A Photometric Survey to Search for Close Binary Stars in Planetary Nebulae: First Results

Samuel Schaub

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College of Arts and Sciences

We present the first stage of results for an ongoing photometric survey of the central stars of planetary nebulae. Planetary nebulae are one of the final stages in the life of a star similar in size to our sun. They often have complex

morphologies and intricate structures. Several competing theories seek to explain these structures. The survey is designed to search for photometric variability, changes in apparent brightness, associated with close binary companions to the central star. Such variability may be observed via eclipses, irradiation of the inner hemisphere of a cool companion, or gravitational distortions of one or both stars. Results of the completed survey will help us better understand the binary fraction of planetary nebula central stars, which in turn will help us understand if binary interactions are the major mechanism producing the variety of morphologies observed in these nebulae.

Information about the Author:

Sam Schaub is a sophomore physics and chemistry double major. He attended Valparaiso University specifically because of the on campus observatory and other physics research facilities and the availability of research opportunities to undergraduate students. This problem has been studied by Professor Todd Hillwig for several years, and Sam is the most recent research assistant to contribute to the project.

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Why Athletes Choke: The Affects of Attentional Focus on an Expert Athlete's Performance

Kristopher Serra

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Expert athletes choke because they revert to what is known as skill focused attention. Skill-focused attention is attending to the step by step procedure of a task. Experts revert back to basic level of thinking when performing the task under high levels of pressure. The purpose of this study is to measure performance in an internal focused task, external focused task, and a pressure task among expert and novice basketball players. Performance of expert basketball players should be worse in the internal focus task compared to the external focused task. A hypothesis is that athletes choke under pressure because they revert to the internal focus task. I will be testing the participants in the external focus condition while under pressure. The pressure put on the subjects should have no impact on performance of the expert athlete, because they are not focused on the step by step process. Ten free throws were shot by each participant in each of the three conditions, and then compared to a baseline. The primary discovery was that expert athletes performed significantly better in the external focus condition when pressure was applied in comparison to the external focus condition in which no pressure existed.

Information about the Author:

Kris Serra is a senior psychology major. He is currently in his final semester. As an avid sports fan, he was always curious as to what separated clutch athletes from the rest. A study presented in a cognitive psychology course prompted him to design a study specific to Valparaiso University's passion for basketball. After graduation, he plans to use his experience in psychology to eventually do criminal investigation or the Secret Service.

Faculty Sponsor: Dr. Kieth Carlson

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Assessment of Enrolled Students in the Knowledge of Four Primary Contexts for Public Relations

Kathleen Serшон, Alexandria Moulchin

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Students working in public relations are better prepared when there is an understanding of the key infrastructures in public relations. Knowing the functions of PR is crucial to understanding and implementing the fundamentals of effective public relations. Students entering the workforce as interns or as entry-level employees must discern these differences to appreciate the demands of the working environment. Knowing how each system works allows

students to make better choices in selecting their PR experience. Such awareness also enables young professionals to better define their career path and to seek the kind of mentors important to their future development. The four primary contexts for public relations were defined with the support of the basic research found in The Encyclopedia of Public Relations. Fundamental definitions of each type of context with extensive descriptions of functions enabled the research team to develop a questionnaire with descriptive phases that could be identified as either an agency, corporate, government or nonprofit context for public relations practitioners. The results are correlated with key student demographics: educational status (freshman, sophomore, junior, senior, or graduate), membership in the Public Relations Society of America (included a detailed assessment of a student's responsibilities), attendance at key public relations sponsored events, and background information on other majors and/or minors being pursued. The hypothesis tested focused on the degree of involvement and level of study as being the key determinants in the outcome of this assessment. The study further examined how students identified the characteristics and functions applied to a particular context as matched by the individual's interest in a particular domain of practice.

Information about the Authors:

Kathleen Sershon is a sophomore from Kenilworth, IL, a northern suburb of Chicago. As a public relations major with a business administration minor, she is interested in one day pursuing a career in corporate PR in Chicago. Katie is a member of the Public Relations Society of America (PRSA). She is the president of Delta Delta Delta National Fraternity. Alexandria Moulchin is a freshman public relations major from Antioch, IL. She is currently a member of the co-ed Valpo cheerleading squad, member of PRSSA (participates as a PRSSA SPARK VISA student team member conducting research on the World Banquet), and a member of Kappa Kappa Gamma Women's National Fraternity.

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The Need for a Houston Radiosonde: A Comparison Study from 2004-2008

Danielle Slotke, Ashley Berg, Brittni Emery

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This poster will present the argument for the need to conduct daily radiosonde launches in Houston, TX. Currently, Houston relies on soundings from neighboring stations, Lake Charles, LA and Corpus Christi, TX. These soundings are used to aid in forecasting weather events. However, mesoscale events that occur between these two locations can be difficult to forecast without accurate upper level data. Between 2004 and 2008, radiosonde launches were conducted from Rice University in Houston, TX. A statistical comparison of the radiosonde data will reveal the number of days that the stations' soundings correlate with each other. The days where there is deviation between the Houston sounding and Lake Charles and/or Corpus Christi will be more thoroughly examined. The comparison study will help to determine whether Houston would benefit from daily radiosonde launches.

Information about the Authors:

Danielle Slotke is a junior meteorology major from Milwaukee, WI. She enjoys working on research with Gary Morris in atmospheric research and will be continuing her research experience this summer at the University of Rhode Island. Danielle participates in NWA, VUSIT, and Delta Xi Phi. Ashley Berg is from Beech Grove, Indiana and is studying meteorology at Valparaiso. Brittni Emery is a junior meteorology major here at Valpo. She has worked with Dr. Gary Morris for two years, and has had the opportunity to conduct research at the Pierce Cedar Creek Institute in Hastings, MI. Current campus activities include NWS, VUSIT, and InterVarsity Christian Fellowship.

Faculty Sponsor: Dr. Gary Morris

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Effects of the Emergency Economic Stabilization Act of 2008 and the TARP Fund Allocation

Brian Joseph Smith

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In response to the financial crisis of 2008 that forced banking giant Lehman Brothers to file for bankruptcy, the United States Congress passed the Emergency Economic Stabilization Act. The Troubled Asset Relief Program (TARP), as the plan came to be called, made available \$700 billion worth of federal loans to various banks across the country. In order to determine the criteria that were central to the initial distribution of the TARP funds, we examined which was more important to the United States Treasury Department, bank solvency or bank size. To answer this question, we examined the relationship between the total assets of a given bank and its share of the TARP funds. In addition, we also examined the relationship between bank capital as a share of assets and the share of the TARP funds received.

Information about the Author:

Brian Smith is currently a sophomore international economics and cultural affairs major at Valparaiso University. In order to better understand the magnitude of the current worldwide financial crises, he chose to examine the effects of the U.S. government bailout of the banking industry. He has previously studied the Swedish banking crises of the early 1990's. The experience he has gained from this project will serve him well in his future career as he better understand the importance of market regulation and stability.

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Characterization of Metal-Reducing Enzymes Expressed by the Bacterium *Shewanella* algae: Gene Sequencing

Changmo Sohn, Sarah Tesch, Jonathan Penny

Departmental Affiliation: Chemistry
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This work is a small part of a larger Department of Energy (DOE) research effort to harness microbes to the task of immobilizing actinide contaminants (chiefly uranium and plutonium) in soil and ground water. The DOE's long term goal is to contain the enormous subsurface pollution problem that resulted from Cold War-era nuclear weapons fabrication and testing. The envisioned immobilization mechanism depends on microbes using water-soluble actinide species in high oxidation states (for example, U+6) as terminal electron acceptors to yield less soluble species (for example, U+4). The specific goal of the work reported here is to sequence the genes that code for metal-reducing enzymes expressed by the Gram-negative soil bacterium *Shewanella* algae. Using a PCR-based approach, two genes have been partially sequenced that are highly homologous to metal-reducing genes in *S. algae*'s closest relatives (specifically, homologs of the MtrA and MtrB genes in the *Shewanella oneidensis* genome). Once the complete gene sequences are in hand, a combination of SDS-PAGE and mass spectroscopy will be used to study the expression of these proteins. This work is supported by DOE subcontract 21059-001-05.

Information about the Authors:

Changmo Sohn is a senior pre-med student with a chemistry major. Two years ago, he started summer research with Dr. Goyne. Sohn is very interested in Dr. Goyne's research which involves searching for bacteria that can clean up nuclear waste. Sarah Tesch is a junior with a biochemistry major. She began researching with Dr. Goyne last summer along with Changmo Sohn and Jonathan Penny. Tesch enjoys working on her current project, which involves sequencing metal-reducing genes in bacteria.

Faculty Sponsor: Dr. Thomas Goyne

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Hurricane Intensity and Ocean Vertical Structure

Christine Standohar, Paolo de Matthaeis, S. Daniel Jacob

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Hurricanes develop in the Atlantic tropical and subtropical waters primarily during the months of June to November when waters remain warm from the summer heating. Due to large strides in satellite coverage in recent decades, these tropical systems are detected prior to significant development and forecasts can be issued way in advance of any landfall. However, even with such a comprehensive understanding of tropical cyclones, forecasters can often misdiagnose storm intensity predictions. With a drastic increase in population and development along the United States and other coastal areas, it is crucial that intensity forecasts for land falling hurricanes be accurate in order to save lives and minimize the severity of property damage. For this reason, research has been conducted to try to understand what atmospheric and oceanic variables can cause rapid intensification, which was seen in several tropical cyclones during the latest hurricane seasons. The purpose of this research is to understand the importance of oceanic heat content and its impact on hurricane intensity using in situ, climatological, and satellite data.

Information about the Authors:

Christine Standohar is a senior meteorology major from Valparaiso University. Her research was part of a summer research internship at NASA Goddard Space Flight Center. She plans on attending graduate school after graduation and continuing her research in tropical meteorology focusing primarily on rapid intensification cycles of hurricanes. Paolo de Matthaeis and S. Daniel Jacob are research scientists at the NASA Goddard Space Flight Center.

Faculty Sponsor: Dr. Teresa Bals-Elsholz

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Monitoring the Changing Topography of the Indiana Dunes with Rasters Built Using ArcGIS

Scott Stewart, Jason Feder, Natalie Drudge

Departmental Affiliation: Geography and Meteorology
College of Arts and Sciences

Our proposed project is to use maps of the Indiana Dunes to track changes in geomorphology of this region. The Indiana Dunes landscape is always changing with the formation of new dunes as well as the movement of current dunes, ever since the most recent ice age. During the times of glacier retreat in the Valparaiso, IN region, the dunes were being born; Lake Michigan formed from melting glaciers and the new body of water brought beaches with it as well as powerful winds. These winds as well as the forest landscape brought sand dunes and these sand dunes made this environment unique. The dunes shelter other plants from winds coming off the lake and are thus important to monitor. Our project will be to digitize maps of this region and to track recent movement of the sand dunes. GIS plays an important role by being able to digitize the maps and store the new maps created in an electronic format. This will make manipulating data in the maps easier and can create new layers that will be helpful in learning more about this unique environment.

Information about the Authors:

Jason Feder is a senior at Valparaiso University majoring in chemistry with a minor in geosciences. He has worked with the Indiana Dunes National Lakeshore during the previous summer in the area of water quality testing. Scott Stewart is a senior at Valparaiso University majoring in geosciences. He is currently working with the Woodland Savanna Land Conservancy and this previous summer worked as a ranger at Jean Lafitte National Historical Park and Preserve in New Orleans, Louisiana with the Student Conservation Association. Natalie Drudge is a junior at Valparaiso University majoring in geosciences. She is interested in working in the future with the fields of environmental conservation and ecology.

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An Examination of Simulated Reflectivity Forecasts from a 10-Member Storm Scale Ensemble Prediction System

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Simulated reflectivity forecasts from the Storm Scale Ensemble Forecast (SSEF) system, including two 4-km control runs, and one additional 2-km high-resolution deterministic forecast, were examined in this study. The SSEF system contains ten WRF-ARW members, eight with perturbed initial conditions and radar data assimilation, and two unperturbed controls with and without radar assimilation. The 2-km high-resolution forecast is otherwise identical to the 4-km SSEF control that includes radar assimilation. All of these model forecasts were compared to the national mosaic base reflectivity (BREF) product to evaluate the following sensitivities: 1) model cloud microphysics schemes, 2) assimilation of radar into the ensemble members, 3) evolution of convection, and 4) size of horizontal grid spacing. From here, two techniques were used to compare the simulated and actual reflectivities from ten randomly selected days in May 2008. First, the percent coverage of 20, 30, 40, and 50 dBz and greater was found by counting the number of gridpoints with dBz values at or above the specified threshold and then dividing by the total number of gridpoints. Second, the biases at the four thresholds for the eight SSEF members, two 4 km control runs, and one 2 km run were found by taking the forecasted reflectivity divided by the actual reflectivity. The members with Thompson microphysics had a substantial low bias at all forecast hours. Also, none of the ten members reproduced well the nocturnal convection evident in this 10-day sample.

Information about the Author:

Derek Stratman is a senior meteorology major with a mathematics minor. With this project, he wanted to explore numerical weather prediction on a storm scale grid. Stratman plans to attend graduate school after receiving his B.S. degree in meteorology from Valparaiso University and seek his Ph.D. in meteorology after earning his M.S. degree. After graduate school, he will likely conduct research in either the academic or government sector of atmospheric science. The other authors of the study are not students of Valparaiso University.

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Public vs. Private Secondary Education and Success in College

Redrick Taylor, Julie Smith, Rachel Dahlgren

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College of Arts and Sciences

This research explores the relationship between students' public or private high school education and their college success. The Null Hypothesis is that there will be no difference between the success of Valparaiso University students' success and the type of high school they attended. The hypothesis is that Valparaiso University students who attended private high school will have more success in college than those who attended public high school. This study surveyed approximately 100 junior level college students. There is a wide array of majors represented. There was approximately equal representation of gender and a diverse representation of race. Research was partly obtained by questionnaires distributed in the student union and in classrooms. A t-test is used to compare the average GPA of students who attended private school versus students who attended public school, measure the amount of extracurricular activities of students who went to either type of high school, and measure the average number of hours participants from both types of high school spend in social settings. An ANOVA was also used to measure number of hours participants from both types of high schools spend in social settings.

Information about the Authors:

Redrick Taylor, Julia Smith, and Rachel Dahlgren are currently junior social work majors at Valparaiso University. They are currently completing internships at social service agencies in Porter County. They are committed to being public servants, and aspire to have prosperous careers in that area. Taylor attended a Catholic high school, while Smith and Dahlgren attended public high schools. Taylor, Smith, and Dahlgren are currently taking a class on research methods in social work and were intrigued by studies done on college preparedness. They decided to conduct a study that explored what, if any, correlation existed between public versus private high school education

and success in college. The results of this study might be useful to the administration at the university as they continue their efforts to extend the best services possible to the entire student body.

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Determination of the Genetic Loci Involved in Male Nonrandom Mating of *Arabidopsis thaliana*

Megan Telligman

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Scientists endeavor to differentiate between species for classification purposes. Sometimes differences between species are difficult to detect and a specific means of distinguishing between species is necessary. According to the biological species concept, a species is defined by their ability to mate and produce viable offspring. Evolutionarily, as two populations of the same species are separated over time, genetic changes occur that help them to better respond to their different environments. The genetic changes between these two separate populations can manifest themselves in inefficient mating when the populations are brought together again. As these changes become more frequent, the ability to mate is greatly decreased, resulting in two distinct species. My research focuses on the genetic basis for these barriers in the plant *Arabidopsis thaliana*. We have taken populations of *Arabidopsis* from different locations in Europe (Columbia and Landsberg). The two populations have been separated for a long period of time, and have evolved some differences, though they have maintained the ability to mate successfully and are thus still the same species. However, the genetic distinctness of each population causes them to mate more efficiently within their own populations. This preference of self is called nonrandom mating. There are two aspects to nonrandom mating: male competition and female choice. By comparing the ratios of progeny among Columbia/Landsberg crosses in conjunction with the genotypes of the parental plants, our lab is able to pinpoint the genetic loci responsible for male competition in *Arabidopsis thaliana*.

Information about the Author:

Megan Telligman is a junior biology major interested in ecology and evolutionary biology. Her work with speciation of *Arabidopsis* in Dr. Swanson's lab has interested her greatly in a field in which she intends to continue both at Valparaiso University and beyond. She believes her work is important both in understanding the process of speciation as well as in the future practical applications the project suggests.

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The February 2007 “Valentine’s Day Storm”: Diagnosis and Impact on the Washington, DC Area

Elizabeth J. Thompson, Brian J. Lasorsa, Steven M. Zubrick

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The so called “Valentine’s Day Storm” was a major impact winter storm, according to the Northeast Snowfall Impact Scale, that began 12 February 2007 in the Central Plains, continued to affect the Midwest and the Middle Atlantic States on 13 and 14 February 2007, then finally the Northeast region of the United States through 15 February 2007. The National Weather Service (NWS) Baltimore/Washington County Warning Area (the Northern Virginia/Maryland/East West Virginia region) was one of the areas heavily impacted on 13 and 14 February 2007.

This case study focuses on the Valentine’s Day Storm’s impact on the greater Washington, DC area on 13 and 14 February 2007. Analyses of upper air maps at standard pressure levels, high-resolution surface plots, numerical model forecasts, soundings, ASOS observations, and satellite and radar imagery were constructed to understand the development of the winter storm. Forecasting products from NWS Baltimore/Washington, the Storm Prediction Center, and the Hydrometeorological Prediction Center were also reviewed. In addition, an analysis was performed

concerning the forecasting challenges that arose in determining the dominant winter precipitation type prior to the beginning of the heaviest precipitation on 14 February 2007 in Washington, DC. The results of the analysis showed that the limitations of the numerical models available contributed to the false prediction of freezing rain as the dominant precipitation type during this time period; heavy sleet/ice pellets were actually observed instead. Finally, local media sources were consulted to gain a further understanding of the storm's societal impact.

Information about the Authors:

Primary author Elizabeth J. Thompson is a junior meteorology major with minors in mathematics and geography. She completed this research project as part of a student volunteer internship this past summer at NOAA/National Weather Service Baltimore/Washington Weather Forecast Office. Co-authors include the WFO's Science Operations Officer, Steven M. Zubrick, and general forecaster, Brian J. Lasorsa, who were each instrumental in the completion of the project.

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4-Equitable Graph Labeling

Robert Thompson, Deborah Beals

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A labeling of a graph is a function L from the vertex set to some subset of the natural numbers. The image of a vertex is called its label. We assign the label $|L(u) - L(v)|$ to the edge incident with vertices u and v . In a k -equitable labeling the image of L is the set $\{0, 1, 2, \dots, k-1\}$. We require both the vertex labels and the edge labels to be as equally distributed as possible. We examine 4-equitable labelings of caterpillars.

Information about the Authors:

Robert Thompson is a junior mathematics and philosophy double major from Crawfordsville, IN. Deborah Beals is a sophomore mathematics major from Plain City, OH.

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Benchmarking the Responsiveness to VU's Guild Program: A Longitudinal Study of Students' Awareness, Knowledge, and Perceptions

Emily Trimble, Lindsay Looker

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The Guild has evolved to be a relationship organization with both women and men welcomed as members upon graduation. Through earlier research in 2006, the concept of the Guild by students was established as having a significant awareness level. However, the full awareness of the resources available through the Guild was not as fully appreciated. This research builds on the previous study. The research instruments and approaches developed expanded to include the more recent technology preferred by students. The data is carefully analyzed as to the student's designated level: freshmen, sophomore, junior, or senior. The results provided insight into the development of research areas to be pursued in the future.

Information about the Authors:

Emily Trimble is a senior public relations major. She interned with the Guild in spring 2008 and hopes to continue working with non-profits after graduation. Lindsay Looker is a senior public relations major. She is currently interning with the Guild and also hopes to work with non-profits after graduation.

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The Role of Event Planning in Nonprofits: Tactical and Strategic Approaches

Kalyn Unger, Katrina Wicks

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Nonprofit organizations rely on event planning as a critical function because of the need for fundraising and community awareness. Such events for nonprofit organizations establish rapport with donors and publics, while also strengthening knowledge of the organization's issue areas. This study examines the nonprofit philosophy towards events essential to an organization's image and reputation. Public relations professionals were interviewed on the critical PR functions applied to key event planning. The questions developed focused around the public relations process of ROPE: research, objectives, programming, and evaluation. The results suggest nonprofits are dependent upon events especially when tied to fundraising. The research identified the factors key to organizational decision making as well as the tactical and strategic approaches in the process.

Information about the Authors:

Katrina Wicks is a senior public relations major with a sociology minor. She is a member of PRSSA, Kappa Kappa Gamma sorority where she has served as secretary, and SAAFE. She has participated in VUSFL and various university intramurals. She is in her second semester as an intern for Valparaiso City Festival and Events, Inc., which is a non-profit governmental public relations agency. Kalyn Unger is a junior biology and public relations double major. She is a member of the Chi Omega sorority. This past fall she spent a semester abroad in Reutlingen, Germany. Kalyn is the secretary and treasurer of AWC for the 2009 spring semester. She is involved in Valparaiso's community by working at Hilltop Neighborhood House.

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Educational Public Relations: A Case Study of Student Experiences

Kathleen VanNelli, Jana Larson, Paul Reed

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Assessment of one's experience in an academic context is critical for those working in public relations. Educational public relations is the second largest area of professional practice for those in public relations. The degree to which a student connects with the university during their period of stay often directly translates into future support for the institution. This study focuses on the responses of students who will become alumni in the near future. The research focuses on 1) the original decision for coming to Valparaiso University, 2) the degree to which the student enjoys attending VU (Likert Scale), 3) the key aspects that are considered positive to determine how exceptional the experience is, 4) the degree of involvement in university activities, and 5) background information on family connections to the university. One last question focused on the future commitments the students are considering for the university. Students enrolled in public relations courses of study for the spring semester at the university served as the sample population. The results were analyzed in terms of academic level, gender, and major. The results indicate the students have a variety of reasons for attending the university and have a mixed response to the quality of their experience.

Information about the Authors:

Paul Reed is a junior public relations student with a second major in geography and a minor in television/radio. Very active in the community, Paul has interned with Porter County Convention, Recreation, & Visitor

Commission, works for Valparaiso based Opportunity Enterprises, and he's done philanthropic work for Hilltop Neighborhood House. Jana Larson is a senior public relations and international service major. She has studied abroad in Namibia and South Africa and interning at Namibia Development Foundation. With SparkPR, she chaired the 29th Annual World Banquet. Currently, she is interning with Christina's Creative Planning and the Wedding Shoppe Directory. Kathleen Vannelli is a sophomore public relations major from St. Paul, Minnesota. She is involved in PRSSA, AWC, and SparkPR. Kathleen will be attending the National PRSSA Assembly in March 2009. She is an active member of the sorority Kappa Kappa Gamma and is involved in philanthropic events within the sorority.

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The Unity of Nonprofits and Corporations: A Genuine Relationship or Strictly Sales Driven?

Andrea Whitcraft

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In the public relations industry, there is often a need for nonprofit organizations to partner with corporation in order to receive vital operating funds. This is especially the case when it comes to nonprofits which organize community events and need support for their operating budget. In return, corporations receive valuable brand exposure and recognition for community involvement. The goal of these partnerships should be to create a successful community-enriching event. Corporations have been taught that community involvement is necessary to develop trust between themselves and the community. However, as happens in the business world, corporations do not create partnerships unless they will be profitable. In theory, partnerships should be mutually beneficial between both the nonprofit and the corporation. Corporations, however, often put their own desired outcomes before the good of the community event. This creates problems in both the execution of the event and the relationship between the nonprofit and the corporation. A case study involving the Chicago Festival Association, which produces the McDonald's Thanksgiving Parade, and their major sponsors demonstrates this relationship between corporations and their nonprofit beneficiaries is sometimes tenuous. Through questionnaires, interviews, and personal experience, this work extends the body of literature in public relations. In general, nonprofits are forced to follow corporations' restrictions in order to receive their operating funds.

Information about the Author:

Andrea Whitcraft is a senior public relations major, with minors in humanities and history, from Lancaster, Ohio. She was selected to be one of the leaders (worked with a class of beginning level public relations students) for the production of Festival of Voices, a benefit for a children's care center. She was a member of the professional VU chapter of the Public Relations Society of America. As a PRSSA member, she was involved with the PRSSA SPARK student agency promoting a mystery writer client. Her internships have covered corporate as well as nonprofit areas. Currently, she is interning with the Chicago Festival Association in Chicago which produces the McDonald's Thanksgiving Parade. Upon graduation, she hopes to find work in an agency or corporation that is active in the community.

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Evaluating Multi-Radar, Multi-Sensor Hail Diagnosis with High Resolution Hail Reports

Christopher Wilson

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Low resolution verification data, as available from the Storm Data database, has hindered the development and evaluation of high resolution hail algorithms as well as the assessment of hail forecasting techniques. Previous

studies have highlighted the inadequacies and inaccuracies associated with this verification data. This study uses high resolution ground-truth hail verification data from the Severe Hazards Analysis and Verification Experiment (SHAVE) to evaluate gridded synthetic hail verification and different radar derived parameters used in predicting severe hail. MESH is found to have limited skill as a synthetic verification tool due to a high probability of false detection and a wide distribution of MESH values for each reported hail size range. In addition, radar-derived parameters are found to provide little skill in the prediction of severe hail as the probability of false detection associated with these parameters leads to low skill scores. The predictive skill of these parameters is also found to decrease with time, limiting the lead time in which skillful prediction of severe surface hail fall is possible using radar derived parameters.

Information about the Author:

Chris Wilson is a senior meteorology major from Stronghurst, Illinois. His major areas of interest are mesoscale and boundary layer meteorology. He will be attending graduate school following graduation from Valparaiso University. Chris conducted this research as part of the National Weather Center REU program during the summer of 2008. He became interested in the topic after noting the difficulties currently associated with predicting hail events.

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Relationships among Life-style, Health Behaviors, and Health Status Outcomes for Underserved Adults

Jenel Yoder, Teri Borys, Evelyn Gomez, Julie Wingstrom, Molly Grime, Kara Jachcinski

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The purpose was to examine the relationships among life-style, health behaviors, and health status outcomes for underserved adults at a nurse managed center. Guided by Bruhn's framework (1988), multiple influences impact life-style that are acquired and change over time. Health behaviors include actions or inactions that directly or indirectly affect health status. A convenience sample of 84 adults was recruited. Data were collected using an investigator developed tool to measure factors influencing life-style and health behaviors. Health status was measured by the SF-12 Health Survey which included general (SF-1), physical (PCS), and mental (MCS) component summary scores. Descriptive statistics and correlations were used to examine the variables. The majority of the sample was white, female, aged 18-64 years, and had an annual income < \$ 25,000. Life-style results indicated: subjects slept 7.16 hours, 44% smoked, 59.1% consumed alcohol, 43% used street drugs, and 45% exercised. For health behaviors, 65% engaged in screening activities and 61% used medications. 89% identified current symptoms; 72% reported medical conditions; and BMI averaged 29.3. Age was negatively correlated with alcohol drinks. Medical conditions were positively correlated with exercise and prescription usage. The only life-style or health behaviors significantly correlated with health status outcomes was prescription medication usage. Medical conditions were inversely related to all health status outcomes. BMI was negatively correlated with SF-1 and PCS. Findings provided selective support for the study variables. The results can be useful when caring for the underserved.

Information about the Authors:

Jenel Yoder and Teri Borys are senior nursing majors. Julie Wingstrom, Molly Grime, and Evelyn Gomez are junior nursing students in the VU College of Nursing. Kara Jachcinski is a sophomore nursing major.

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Interesting Reactivity of 4-(Dimethylaminomethyl)pyridine

Lauren Wolf, Susan Wiltrakis, Kevin Jantzi

Departmental Affiliation: Chemistry

College of Arts and Sciences

The reactivity of Dimethylaminopyridine and 4-(Dimethylaminomethyl)pyridine were compared. Dimethylaminopyridine is alkylated with iodomethane exclusively at the ring nitrogen while 4-(Dimethylaminomethyl)pyridine is alkylated with iodomethane exclusively at the non-ring nitrogen. This dramatic difference in reactivity between two very similar starting materials is attributed to resonance effects.

Information about the Authors:

Lauren Wolf is a freshman chemistry major working on her first research project. Susan Wiltrakis is a junior biology/chemistry double major. Susan plans to become a physician. Kevin Jantzi is assistant professor of chemistry.

Faculty Sponsor: Dr. Kevin Jantzi

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Role of Public Relations in Non-Profit Organizations during a Recession

Ashley Wolter, Ted Schuster

Departmental Affiliation: Communication
College of Arts and Sciences

Nonprofit organizations that serve the community rely heavily on financial support from businesses, foundations, and individuals in order to accomplish their organizational goals. But with the recent downturn of the economy, households and businesses have seen their disposable income decline. This poses a challenge to the non-profit organizations, and they have to increasingly rely on positive public relations that show the community at large the widespread benefits of their work. This study interviewed the board of directors of several local non-profit organizations and surveyed key constituents to gather information, attitudes, and behavior toward their fund raising efforts. The results indicate that these organizations develop mutually beneficial long term relationships with many of their donors, creating a solid base of financial support even during hard economic times. These donors spread the word of the positive impacts of the non-profit organizations in the community, creating a positive public relations "buzz," thus creating the opportunity for a potential network of new donors. It can be concluded that a successful nonprofit will take the extra step to ensure that the relationships with their donors is not purely financial, and attempting to develop a mutually beneficial relationship with all donors will result in consistent support even during a recession.

Information about the Authors:

Ted Schuster is a senior public relations major from Menomonee Falls, Wisconsin. When not studying, he enjoys playing basketball, fishing, and snowboarding. He became interested in the inner workings and fund raising efforts of non profit organizations after working at the Boys and Girls Club of Greater Milwaukee. He recently attended the PRSSA regional conference in Chicago, entitled A Taste of Chicago PR, which was planned by Valparaiso University's PRSSA chapter. Ashley Wolter is a senior public relations major who plays softball for Valparaiso University. She also enjoys photography, watching The Office, and plans on working with non-profits through AmeriCorps upon graduation in May.

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Treating Bulimia and Anorexia Nervosa: A Critical Evaluation

Stacey Woods

Departmental Affiliation: Senior Honors Thesis
Christ College

Eating disorders such as bulimia and anorexia nervosa are diseases that have tortured generations of men and women alike. Society's idolization of thinness and the "perfect body" are often identified as the culprits for these epidemics. However, this issue runs deeper than just social expectations. Often, the psychological and emotional implications of these diseases are ignored in exchange for a focus on the physical ailments that accompany them. People are unaware of the mental anguish from which eating disorder victims suffer, and they judge these sufferers because of their skeletal bodies. In order to more effectively treat eating disorders, better treatment options need to be explored. Doctors and society alike need to be educated on the mental effects of these disorders in order to create more sympathy for the sufferers. There is also much to be learned from the history and characteristics associated with anorexia and bulimia. By combining this knowledge with a new emphasis on psychological treatment, better therapy techniques can be created in order to better fight these diseases and protect future generations from suffering.

Information about the Author:

Stacey Woods is a senior actuarial science and economics major and a Christ College scholar. Through her classes in Christ College, she has taken an interest in issues that pertain particularly to women and the problems and challenges they have traditionally faced while focusing on change for the future. She plans to continue expanding on her knowledge of these topics in her free time while working as a full time actuarial analyst after graduation.

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Potential Damage from Failure of the Anderson Dam and Evacuation Proposal for Morgan Hill City, California

Sarah Zika, Allison Wagner

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College of Arts and Sciences

Geographic Information Systems (GIS) are a key tool in the analysis of dam failures. By mapping out the landscape and man-made features, water flow and property destruction can be determined. The Anderson Dam has a high-risk of failure and its location right next to Morgan Hill City is potentially hazardous. A study of where the water might flow will provide a good estimation of property damage and people displacement can be calculated. As a result, evacuation plans can be set in place to increase preparedness. It is expected that the water would flow north and south into the valley containing Morgan Hill. A highway running the length of the valley is expected to be the main escape route as long as it remains clear. Articles assessing the condition of the dam have shown that its potential for failure is high and that earthquakes are likely to be the cause of failure. GIS data will be gathered from various sources including the Santa Clara Valley Water District and looked at in detail to determine inundation areas and best evacuation routes.

Information about the Authors:

Sarah Zika is a junior electrical engineering major from McHenry, IL. She interned with Caterpillar, Inc. this past summer working on Electronic Control Modules. Originally interested in the electronics behind GIS, Sarah took the intro GIS class and has continued in the advanced class to learn more application-based knowledge. Allison Wagner is a junior geography major from Naperville, IL. She has completed an internship in GIS with the Village of Algonquin and compiled data from the Engineering Department's project in Costa Rica. She is a member of the Geography Club.

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