Celebration of Scholarship and Creativity

Worcester State University
April 24, 2013

www.worcester.edu/research

SCHEDULE OF EVENTS

Poster Session

1:00 - 3:00 p.m.
STUDENT & FACULTY RESEARCH POSTER PRESENTATIONS
Blue Lounge & North/South Auditorium, Student Center

Oral Presentation, Exhibit, & Performance Schedule

9:00 - 9:45 a.m.
THE NATURE OF THE CONCRETE JUNGLE: POTENTIAL FOR GREEN SPACE IN WORCESTER
Michael Gallotta
Faculty Adviser: William Hansen, Ph.D.
Fallon Room, Student Center

9:45 - 10:30 a.m.
YOUNG WOMEN'S VOICES: READINGS FROM EMERGING WSU WRITERS
Taylor Specker, Jennifer Beckwith, Anna-Lisa Norman, Ash Saraga
Faculty Adviser: Matthew Ortoleva, Ph.D.
Blue Lounge, Student Center

MELTING ANTARCTICA: CLIMATE CHANGE AFFECTING ANTARCTIC ICE AT LOWER ELEVATION
Eric Moir
Faculty Advisers: Doug Kowalewski, Ph.D., Stephen Healy, Ph.D.
Fallon Room, Student Center

10:30 - 11:15 a.m.
A REASON TO KEEP IT LOCAL: WHY PEOPLE SHOP AT FARMERS' MARKETS **(CH)**
Katelyn Rozenas
Faculty Adviser: Pat Benjamin, Ph.D., Stephen Healy, Ph.D.
Fallon Room, Student Center

12:30 - 3:30 p.m.
NEXT BIG IDEA
Student Entrepreneurs
Faculty Advisers: Ranuka Jain, Ph.D., Joan Mahoney, Ph.D., Rodney Oudan, D.B.A., Maureen Stefanini, Ed.D., Elizabeth Wark, Ph.D.
Seven Hills Lounge, Wasylean Hall

1:00 - 1:45 p.m.
PROBLEMS WITH PRIVILEGING MARRIAGE IN PUBLIC POLICY
Brittany Davis
Faculty Adviser: Fortunata Songora Makene, Ph.D.
Fallon Room, Student Center

1 - 7 p.m., Opening Reception 5-7 p.m.
SENIOR THESIS EXHIBITION
John Balco, Tessa Demers, Jessica Gain, Rachel Lubanko
Faculty Advisers: Catherine Wilcox-Titus, Ph.D., Amaryllis Siniossoglou, M.F.A., Stacey Parker, M.F.A.
The Gallery at WSU

2:00 - 3:00 p.m.
NAFTA AND THE ZAPATISTAS
Constanza Bartholomae
Faculty Adviser: Guillermina Elissondo, Ph.D.
Sullivan Academic Center, Room 118

7:30 p.m
VPA MAJORS PRESENT MUSIC, THEATRE, AND ART CAPSTONE PROJECTS
Caitlyn McKenna (Music), Ann Eggleston (Music)
Faculty Adviser: Christie Nigro, Ph. D.

Amanda Hoegen, Joseph Nawn, Darrell Ginese(Theatre)
Faculty Advisers: Sam O'Connell, Ph.D., Adam Zahler, M.F.A.
Fuller Theater, Shaughnessy Administration Building

A Celebration of Scholarly and Creative Accomplishments

Welcome to the sixth annual Worcester State University Celebration of Scholarship and Creativity. This event is one of the highlights of our academic year because it provides the opportunity for us to showcase the excellent work that our students and faculty are doing in research, scholarship, and creative projects.

We take great pride in the quality of our academic programs, and perhaps no other venue provides as comprehensive a picture of that quality as this Celebration. We have presentations from across disciplines in the arts, humanities, social sciences, and natural sciences. These presentations range from posters to critical papers to panel discussions to performances.

While the Celebration is a large event, it is really just a microcosm of the kind of student learning and mentoring that our faulty provide every day in all of our academic programs.

Also, this year, for the first time, we have presentations being made on business plan proposals as part of our "Robert K. O'Brien Next Big Idea" Contest, sponsored by a successful alumnus entrepreneur. Students will be presenting proposals of their ideas for the next great product or service to a panel of expert judges for cash prizes and the opportunity to have their idea supported to become a working business.

So please enjoy our 2013 offerings at what has become a signature Worcester State event.

Charles Cullum, Ph.D.
Provost and Vice President for Academic Affairs

WORCESTER STATE UNIVERSITY

BIOLOGY

ANNOTATION OF THE 2ND 3L CONTROL REGION OF THE CHROMOSOME OF DROSOPHILA ERECTA

Isaac Appiah

Faculty Adviser: Daron Barnard, Ph.D.

The purpose of this research was to annotate the 2nd 3L control region of the chromosome of Drosophila erecta. The functions of genes in this fosmid were then determined based on the location found in relation to the location of similar genes in D. melanogaster. Various gene prediction programs like Twinscan, Genescan, Clustal and Gene Record Finder were used to establish the possible locations of the genes and to improve on the accuracy of the gene locations; Gene alignment programs as BLAST were used to gather further supporting evidence for the function and presence for specific genes in D. erecta which are also present in Drosophila melanogaster, which is the most annotated of the Drosophila species based on homology. It was found that the chromosomes resembled each other in most of the criteria used and only differed in the type of repetitive sequence, gene order and orientation. In conclusion, D. erecta had similar genes within the similar location as that of D. melanogaster suggesting functions given to the genes in D. melanogaster can be assigned to the genes in D. erecta with that aligned due to homology.

OOCYTE MATURATION: THE EFFECTS BISPHENOL A (BPA) HAS ON THE PROCESS

Isaac Appiah

Faculty Adviser: Daron Barnard, Ph.D.

Oocyte maturation is the process of meiotic divisions that occur in the egg cell and can be grouped into two main components, namely nuclear and cytoplasmic maturations. The maturation period in oocyte is required to achieve a viable egg for the process of fertilization. Bisphenol A (BPA) is a colorless solid organic compound that is soluble in organic solvents but less soluble in water. It is known to be used in the production of epoxy resins, dental sealants, polycarbonate plastics and lacquers for food cans and water pipes. It is shown to have estrogenic properties and its effects are very detrimental to the mammalian reproductive abilities. The aim of this research is to determine and identify the effects of BPA on the oocyte maturation process as well as identify genes affected by BPA before the process of oocyte maturation in Xenopus begins and the pathway through which BPA works.

IDENTIFICATION OF A XENOPUS PANNEXIN-1 GENE IN XENOPUS EMBRYOS

Derek LaPlaca

Faculty Adviser: Daron Barnard, Ph.D.

We sought to determine the expression of the Pannexin gene (PANX1) in Xenopus laevis. PANX1 is important in the creation of gap junctions for intercellular communication (GJIC) in early embryo development. The basis of this experiment was to search for a homologous gene to the PANX1 gene that was found and sequenced within a relative species, Xenopus tropicalis. Finding and understanding this gene could be a fundamental and important discovery towards further research on embryological processes and could potentially increase the understanding of how cells communicate with one another.

INVESTIGATION OF Bni4 AS A CYTOPLASMIC TARGET FOR PHOSPHORYLATION BY Clb2/Cdk1

Joseph Devin Malko

Faculty Adviser: Jennifer Hood-DeGrenier, Ph.D.

Clb2 is a mitotic cyclin that activates the cyclin-dependent kinase Cdk1/Cdc28 to phosphorylate a large number of target proteins in both the nucleus and cytoplasm of the budding yeast Saccharomyces cerevisiae. One cytoplasmic target is the bud neck-localized protein Bni4. Our preliminary results suggest that unphosphorylated Bni4 associates with the actin motor protein Myo5 and that phosphorylation of Bni4 by Clb2/Cdk1 disrupts this interaction. This study uses a GST epitope tag on Bni4 to facilitate its purification followed by immunoassays

for Myo5 to assess the Bni4/Myo5 interaction. We expect that in a yeast strain expressing a nuclear-restricted, mutant Clb2 protein, Bni4 will remain bound to unphosphorylated Myo5, whereas in cells expressing wild-type Clb2, Bni4 will be released from Myo5 at mitosis via Clb2/Cdk1-mediated phosphorylation. If confirmed, this will identify a new regulatory role for cytoplasmic Clb2/Cdk1.

THE EFFECT OF BISPHENOL-A ON GUT MICROBIOTA

Kimberly Mohareb and Michelle Wheeler

Faculty Adviser: Ellen F. Fynan, Ph.D.

Bisphenol-A (BPA) is a chemical used to make polycarbonate plastics and epoxy resins. BPA can leach from the polycarbonate into liquid and solid foods. Exposure of BPA to humans has raised many questions about its effects on the human body. This experiment focuses on the effect of BPA on representative gut microbiota: Lactobacillus acidophilus and Escherichia coli. After growth media (Lactobacillus MRS or Mueller Hinton agar plates) were inoculated with the bacterial cultures, various concentrations of the control substance, ampicillin, were pipetted into wells. Following incubation at 37°C, the zones of inhibition were measured. This served as a basis of comparison for observing the inhibitory effect of BPA on these two organisms when the same procedure was followed using BPA instead of ampicillin. These data will be presented and may provide insight about how BPA affects human health.

MORPHOLOGY AND FUNCTION OF CEPHALIC GLANDS OF RAMPHOTYPHLOPS BRAMINUS

Shaun Polissack

Faculty Adviser: Nirvana Filoramo, Ph.D.

Ramphotyphlops braminus is a squamate reptile that has distinctive glands deep to the cephalic scales. A member of family Typhlopidae, R. braminus is a species of blind snake that lives underground and feeds on invertebrates. Through descriptions from serial sections and comparisons to published literature, this project is currently researching the morphology and function of these special cephalic glands of R. braminus. Donated specimens were processed and embedded in paraffin wax, and sectioned using histological techniques. Cephalic sections were stained with hematoxylin and eosin, and then observed using compound bright field microscopy. Our working hypothesis is that cephalic glands of R. braminus produce excretions to help burrow into soil and other organic matter. This description of the histology of these glands may support this hypothesis, or point us in a new direction for a possible function of these unique cephalic glands found in Typhlopidae.

BIOTECHNOLOGY

CHARACTERIZATION of TRANSPOSON INSERTION MUTATION in AGROBACTERIUM TUMEFACIENS STRAIN C58

Caitlin Kearns, Kelsey Jarvis

Faculty Adviser: Maura Pavao, Ph.D.

Agrobacterium tumefaciens is a soil bacterium and plant pathogen that is used in plant biotechnology to genetically modify plants. To understand the genetic basis for metabolic and cellular functions in A. tumefaciens, a transposable element, Tn5-RL23, was introduced into the genomic DNA, thereby creating random mutations. Mutants were selected according to their growth rates. Their DNA was isolated and the transposon insertion sites were identified by sequencing. Our findings may lead to new information about the growth and pathogenicity of A. tumefaciens.

A SCANNING ELECTRON MICROSCOPE STUDY OF A PEACOCK FEATHER
Nipulkumar Patel
Faculty Adviser: Peter Bradley, Ph.D.
A male peacock is known for the spectacular beauty of its tail feather with "eye" pattern. It was known that the feather's bright color is not produced by pigmentation but due to the optical interference from the melanin granules within the feather. This phenomenon is known as structural coloration. The goal of this investigation was to examine the peacock's different colored barbules under the scanning electron microscope to see if structural difference between melanin granules could be seen. It was hypothesized that they might have some structural difference at a very small scale, which helps in the structural coloration. The result of this investigation shows that no differences could be seen between different colors of the feather in the scanning electron microscope.

BUSINESS

ON GUARD METAL HEALTH INITIATIVE
Julie Broderick, Morgan Tienhaara
Faculty Adviser: Jay Mahoney, Ph.D.
To promote healthier bodies and minds, WSU Enactus, in a partnership with the SHINE Initiative and Central Massachusetts Suicide Prevention Coalition, is hosting the first annual On Guard 5K Run/Walk in honor of Corrections Officers. The suicide rate of Corrections Officers is 39% higher than the general working population and they often experience depression and PTSD. Our mission: build awareness about the prevalence and impact of mental health and suicide within that population. Education is key. Working together with SHINE we have: developed a mental health awareness kit, staffed informational tables, and brokered working partnerships to ensure sustainability. The framework for marketing, logistics, operations and financing of the race were established and proceeds from the race will go towards a speaker series and other mental health awareness efforts within the department of corrections. Measures of effectiveness will be presented for program growth, efficacy, reach and fundraising.

ART-CAN-TECTURE **(CH)**
Smbat Defterdarian, Paul Concesion, Ashley Cornish, Alex Riveness, Salvatore Tecci
Faculty Adviser: Jay Mahoney, Ph.D.
Food insecurity in Worcester County is 6X the Massachusetts average. Our team focused on creating immediate relief, education, and building partnerships to ensure sustainability. With Campbell's Let's Can Hunger initiative, we developed Art-Can-Tecture, a unique food drive with a creative twist. ACT is designed to offer organizations a mechanism to support internal culture and enhance belongingness while providing food donations. Employing marketing concepts like brainstorming, focus groups, and Delphi Techniques, we developed an operational framework and launched the pilot program, collecting 1200 lbs. of food. Advertising and PR included print, social media, and buzz marketing. Partnering with Urban Studies, we launched a multi-pronged advertising campaign to increase attendance at the Food Day Film Festival. Five of six sessions were standing room only. We created, administered and analyzed surveys: 41% of attendees learned of the event through Enactus advertising.

ENTREPRENEUR SHOP **(CH)**
Robert Finnegan, Tiffany Milotte, Tarik Buxton, Nancy Moreira, Victor Palencia
Faculty Adviser: Jay Mahoney, Ph.D.
The goal of "Entrepreneur-Shop" was to provide no-cost business advising services to local small business owners and entrepreneurs. We identified market need, investigated opportunities, and created two workshop

modules designed to make a difference in efficiency, effectiveness or both. The accounting module employed QuickBooks, an inexpensive, comprehensive, accounting and business management software. We hit salient aspects via a practical hands-on session. The second segment taught social media marketing implementation through Facebook, Twitter, and basic website development and participants built and launched a business web-page. Entrepreneur-Shop provided entrepreneurs a different skill set to enhance their business viability. To assess the efficacy of the workshops, we constructed pre- and post- tests, first examining construct and content validity of the instrument. We conducted interviews to assess the perceived value of the workshop. Results have been analyzed, charted and graphed and will be presented.

COUNTRY KETTLE SMALL BUSINESS CONSULTING PROJECT

Anthony McDonnell

Faculty Adviser: Jay Mahoney, Ph.D.

The WSU Enactus team continued business consulting with a local café. Phase I increased energy sustainability, reduce costs, and increased revenues through a pilot coupon campaign. Phase II focused on increasing growth through visibility and awareness.

The SWOT analysis and financials were reviewed. Temporary signage was addressed, with an immediate 2% patronage increase. Research into viable permanent signage options was completed, a decision made and implementation is currently underway. Feedback and financial results from the pilot coupon campaign were analyzed and a refined coupon campaign developed, segmenting the market by user and time. We researched and proposed an expansion of marketing distribution channels and will monitor the efficacy of each method. A new web page was created, linked to social media, and the owner empowered to take control of daily updates, and postings. Overall, an increase of a 20% was observed in sales over the same period last year.

MoneySKILL FINANCIAL LITERACY

Karol Pawlowski, Anne Hoscilio, Nancy Moreira, Victor Palencia, Diego Rodrigues Alves

Faculty Adviser: Jay Mahoney, Ph.D.

A 2011 American Express survey found 57percent of parents with high school and college age students gave schools a failing grade in teaching financial literacy, yet this is a critical skill for long-term success. MoneySKILL is a free on-line course that offers students an opportunity to develop their financial understanding through the use of interactive online modules. The Enactus team has partnered with an ESL program and a high school to introduce financial literacy into their curriculums. We developed, translated, and taught critical modules to ESL students in two workshops. We created pre- and post-tests to assess financial literacy, analyzed the results, and tracked the efficacy of the program. We introduced and demonstrated the MoneySKILL program to the High School administration and will be working with them to include it in the curriculum for Fall 2013.

NEXT BIG IDEA**

Student Entrepreneurs

Faculty Advisers: Ranuka Jain, Ph.D., Joan Mahoney, Ph.D., Rodney Oudan, D.B.A., Maureen Stefanini, Ed.D., Elizabeth Wark, Ph.D.

This year, Worcester State University established the First Annual Robert K. O'Brien "Next Big Idea" contest, named for and financially supported by WSU Class of 1958 alumnus Robert K. O'Brien. O'Brien has a long and distinguished career in business and has helped launch 10 companies employing more than 300 people. He believes that WSU students have the creative innovation to launch the "Next Big Idea." Support for interested students has been offered through a 1-credit class, "BA 482: An Entrepreneur's Approach to Business Development," as well as workshops throughout the spring 2013 semester. Students will present their "Next Big Idea" concepts before judges in the Seven Hills Lounge in Wasylean Hall, 12:30-3:30 p.m. on April 24. Judges are: Robert K. O'Brien '58, Kim Harmon '95, Craig Bovaird '77, and David Rumrill. For more information, visit worcester.edu/bigidea.

CHEMISTRY

HEMOLYSIS

Samantha Abel

Faculty Adviser: Anne Falke, Ph.D.

Hemolysis is the bursting of blood cells where hemoglobin is released into the surrounding fluid. Hemolysis can cause hemolytic anemia - the loss of blood cell count in the body. Some patients can also have a hereditary condition called Glucose-6-phosphate dehydrogenase (G-6-PD) deficiency that causes hemolysis if certain drugs are introduced to the body. Scientists conduct experiments with novel drugs to assure that their drug does not cause hemolytic anemia or affect the G-6-PD deficiency. Experiments were done with positive and negative controls to determine if the blood cells would burst. Positive controls are known to cause hemolysis. Negative controls are not supposed to cause hemolysis. Different anticoagulants were also tested to see if any of them increased hemolytic effects when interacting with any drug. Currently, positive controls have been tested and are proven to cause hemolysis. Commonly used drugs will be tested to determine if they cause hemolysis.

DETERMINATION OF REACTION RATE CONSTANT USING NMR

Esther Baah, Adelaida Omwandu, and Pablo Larrea

Faculty Adviser: Joseph Quattrucci, Ph.D.

Chemical kinetics is the study of the rate of chemical reactions. This experiment introduces undergraduate physical chemistry students to the use of NMR as a way to measure reaction rates and determine rate constants. In this experiment a proton NMR was used to measure the kinetics of a deuterium-hydrogen exchange between D_2O and $H_2PO_2^-$. Sodium deuteroxide was used as a catalyst. The first order pseudo reaction rate constant was determined by plotting $\ln[H_2PO_2^-]$ vs. T time. A linear fit to the data was used to determine the rate constant.

Ab initio SIMULATIONS of Ni ATOMS ADSORBED TO A CARBON SURFACE

Zak Baumer, Nilay Patel

Faculty Adviser: Joseph Quattrucci, Ph.D.

Carbon nanotubes have been researched heavily for their ability to store elemental hydrogen. It is theorized that a ”spillover” mechanism is involved in the process of hydrogen bond breaking. This mechanism relies on a metal catalytic support over which the hydrogen bond breaks. In this work we investigate a nickel atom, as the catalytic site, adsorbed to graphite and graphene. The Vienna Ab-initio Simulation Package (VASP) is used to theoretically investigate the preferred binding site of the nickel atom. In addition, the number of nickel atoms per unit cell is determined. This work provides insight into the carbon nanotube system and allows for further studies including the hydrogen molecule to be considered

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PHOTOCHEMICAL DEGRADATION OF IONIC LIQUIDS

Huong Doan

Faculty Adviser: Meghna Dilip, Ph.D.

Every year 30 million pounds of volatile organic compounds (VOCs) are used in the US. Often times VOCs are toxic / carcinogenic and may also contribute to ozone depletion. Ionic liquids are potential replacements for volatile organic compounds due to their low vapor pressure and non-flammability. However, commonly used ionic liquids have been found to be negligibly biodegradable, thus potentially posing a problem when they are disposed. Theoretically, they could become persistent pollutants in waste water treatment systems. We present results of a photo-degradation study on four ionic liquids: 1- butyl-3-methylimidazolium chloride, 1-butyl-3-methylimidazolium tetrafluoroborate, 1-butyl-2,3-dimethyl chloride and n-butyl pyridinium chloride using a photoreactor. Degradation products were studied using UV- vis, IR and NMR.

Studying photo-degradation will eventually help us understand the degradation of ionic liquids and thus help design new “greener” ionic liquids. This study builds on work done by Czerwicka et al. (J. Haz. Mat. 171, 2009, 478-483).

COMPUTATIONAL STUDIES OF HC1

Lisa Enman, Andrew Kurtz, and Matt Ott

Faculty Adviser: Joseph Quattrucci, Ph.D.

In this work, the bond length, bond energy, and molecular constants for HCl are calculated and compared to experimental values. The methods used to approximate the wavefunctions of the electrons and perform the calculations were ab initio (Hartree-Fock) and density functional theory (DFT). Two types of DFT methods were included, one using local spin density approximation (LSDA) and the other gradient density approximation (HCTH). Of the three, the Hartree-Fock ab initio method shows the closest agreement with literature values. The percent errors for equilibrium bond length, fundamental frequency, and rotational constant are 0.8%, 2.2%, and 1.6% respectively. The single-point energy values for HCl calculated by GAUSSIAN were fit to the Morse potential function. From this fit the anharmonicity, centrifugal distortion, and vibrational-rotational coupling constants were 58.84 1/cm, 0.000368 1/cm, and 0.255 1/cm, respectively.

THERMODYNAMICS OF DNA DUPLEX FORMATION

Carolyne Gikunju, Faiza Hassan, Kwasi Kankam, and Lily Phoummalayvane

Faculty Adviser: Joseph Quattrucci, Ph.D.

The thermodynamic properties of the denaturation of a DNA duplex have been investigated. The absorbance of four different DNA concentrations was measured using a UV-Vis spectrophotometer at temperatures ranging from 0-70°C. A plot of the normalized absorbance versus temperature was used to determine the melting temperature (Tm) of the DNA. $\Delta H°$ and $\Delta S°$ of the denaturation were found from a van't Hoff plot of the experimental results. $\Delta G°$ was also determined. This experiment has been performed as part of physical chemistry lab development and provides undergraduate chemistry students an opportunity to apply concepts learned in physical chemistry to a biological system.

TRACE METAL IMPACT ON MIDDLE RIVER (WORCESTER, MA, USA) SEDIMENTS FROM THE ELECTROPLATING INDUSTRY

Tiffany Hatstat, Travis Holbrook

Faculty Adviser: Anne Falke, Ph.D.

The electroplating industry produces waste products that may contain trace metals such as cadmium, lead, and chromium. By using Graphite Furnace Atomic Absorption Spectroscopy, soil samples collected at three different depths along the Middle River located near an electroplating company in Worcester, Ma were analyzed for concentrations of cadmium that exceed Environmental Protection Agency standards. Samples were collected upstream and downstream from the electroplating company. Samples collected upstream from the outflow demonstrated a decrease in cadmium concentration (0.023ppm to 0.006ppm) with depth while samples collected downstream showed an increase in cadmium concentration (0.012ppm to 0.022pm) with depth. Future studies will analyze a wider array of samples along the area of suspected contamination and analyze all samples for chromium and lead.

PHOTOCHEMICAL DIMERIZATION PROPERTIES OF COUMARIN

Daniel Jazwinski

Faculty Adviser: Margaret Kerr, Ph.D.

Coumarin is a naturally occurring, sweet smelling, and bitter tasting molecule which is found in various plants. Derivatives of coumarin have already various uses, such as in the medical field for its anticoagulant properties, to being an additive in perfumes. Coumarin is also a photochemically active molecule that is capable of forming and breaking dimers when irradiated with ultraviolet light of specific wavelengths. The synthesis and characterization of 7-(3-bromopropoxy)-4-methylcoumarin, alongside the characterization of 7-hydroxy-4-methylcoumarin, and 6,7-dihydroxy-4-methylcoumarin is described. Characterization was

completed using the melting point, thin layer chromatography, infrared spectroscopy, proton nuclear magnetic resonance spectroscopy, ultraviolet-visible spectrophotometry, and fluorometry. Focus was placed on the study of the dimerization properties of these molecules when exposed to ultraviolet light. The subsequent goal is to study the effect these dimerization properties have on the water solubility of a polymer with coumarin incorporated into structure of the polymer.

INCORPORATING IRON IN CELLULOSE FILMS - PREPARATION AND CHARACTERIZATION

Mateo Kocaj

Faculty Advisers: Meghna Dilip, Ph.D., Joseph Quattrucci, Ph.D.

Cellulose, an organic polysaccharide found in plants, is both an abundant and a renewable resource. Ionic liquids may be used to dissolve cellulose and cellulose films can be cast using this method. The use of ionic liquids replaces strong acids and obviates the need for high temperatures. The ionic liquids used to dissolve the cellulose are also environmentally friendly as a result of their thermal stability and lack of volatility. In this project, cellulose films were prepared and a reduction technique was used to incorporate iron into the films. The cellulose films that were prepared were examined using a Scanning Electron Microscope (SEM) and an Atomic Force Microscope (AFM) in order to determine the composition of the film. Ultimately, the use of cellulose films with integrated iron will be explored in the cleanup of arsenic contaminations.

TOWARDS GREENER REMEDIATION OF HEXAVALENT CHROMIUM USING CELLULOSE FILMS

Alexandra Kostaras, Huong Doan

Faculty Adviser: Meghna Dilip, Ph.D.

Aqueous biphasic systems have been shown to form when a hydrophilic polymer is mixed with a water structuring salt, such as K_3PO_4. The process of dissolving cellulose and casting it into films can be accomplished using 1-butyl-3-methylimidazolium chloride; an alternative for the harsh conditions normally required. Using cellulose films prepared, it was shown that cellulose is salted out similarly to hydrophilic polymers when mixed with a kosmotropic salt. While the films do not take up Cr(III), qualitative removal of Cr(VI) from salty environments using cellulose films has been achieved. Quantitative analysis is currently being conducted using a fluorescence method, where Cr(VI) removal is quantified by the system's ability to quench Rhodamine 6G. Factors such as type and concentration of salt, as well as concentration of chromium are being investigated.

PHOTOCHEMICAL ACTIVITY OF COUMARIN

Pablo Larrea

Faculty Adviser: Margaret Kerr, Ph.D.

Coumarin is a photo chemically active compound that has a wide range of uses, from the medical field to the food industry, and many derivatives. When synthesizing new derivatives it is important to understand the effects of ultra-violet light on coumarin and understand the effects of substituents on the rate of dimerization. This experiment seeks to further understand the dimerization of 7-hydroxy-4-methylcoumarin when it is introduced to ultra-violet light. In addition to understanding the photochemical properties of 7-hydroxy-4-methylcoumarin by using fluorescence spectroscopy and UV-Visible spectroscopy, coumarin derivative 7-(3-bromoporpoxy)-4-methylcoumarin was synthesized and characterized. Coumarin and its derivatives can be used to create water-soluble, photo-active polymers when attached to poly-vinyl alcohol that can be used as photoresists. This study determines the rate of dimerization of different derivatives and to find out which coumarin is best to use in subsequent reactions. Future studies will compare the different derivatives using fluorescence and UV-Visible spectroscopy.

PREBIOTIC PHOSPHORYLATION

William Reusch

Faculty Adviser: John Goodchild, Ph.D.

Phosphorylation has played a huge role in the evolution of life on earth. Scientists know that this process must have occurred millions of years ago under prebiotic conditions. In this study, agaros gel electrophoresis is used to test for the presence of Uridine that has been phosphorylated under prebiotic conditions. It was shown that Uridine could be phosphorylated in the presence of water and urea when heated until vaporization.

PALLADIUM-CATALYZED-ALKYNE COUPLING

Lewis Steen, Edward Poku

Faculty Adviser: Margaret Kerr, Ph.D.

Benzofuran is a natural compound taken from coal tar that is a key ingredient in the synthesis of resins. Natural resins comes from plants and are used as raw materials which are used in the synthesis of other products. A green way to synthesize a benzofuran is through deprotonation of a terminal alkyne for the use of forming a new carbon-carbon bond through nucleophilic addition to an electrophile or through a Sonogashira coupling reaction. In this experiment 2-methyl-3-butyne-2-ol was used to accelerate the reaction due to its high surface area-to-volume ratio and efficiency of palladium itself. This reaction demonstrated principles of green chemistry such as using a catalyst to effect chemical transformations, use of renewable chemical feedstock's, and use of a less hazardous solvent. The study of the palladium catalyst in organic synthesis as senior level lab protocol will then be applied at Worcester State University.

GREENER TEACHING OF THIN LAYER CHROMATOGRAPHY

Erin Williams

Faculty Adviser: John Goodchild, Ph.D.

Current Thin-Layer Chromatography solvents were replaced with greener solvents which were easily recyclable. Toluene and acetone were chosen due to the significant difference between boiling points and the lack of formation of an azeotrope, which allowed for the two solvents to be separated with simple distillation. Of the four experiments in which TLC were used, three could easily have toluene and acetone replace the current solvent systems. Ratios of 1:1 toluene-acetone were most effective in the experiments using 1-ethynyl-1-cyclohexanol and the analgesics. A 5:4 toluene-acetone solution was found to be most useful for the ferrocene experiment. Simple distillation was done on a 1:1 toluene-acetone mixture and fractions were analyzed using HNMR.

SYNTHESIS OF TRANSITION METAL COMPLEXES FOR CATALYSIS IN WATER

Kenneth Zielinski

Faculty Adviser: Jeremy R. Andreatta, Ph.D.

Due to the increasing restrictions associated with use and disposal of organic solvents in industry, there has been a peaked interest in the development of catalysts that can function in or are soluble in water. The water soluble phosphine PTA (PTA = 1,3,5-triaza-7-phosphaadamantane) has been utilized as a monodentate ligand to impart water solubility to transition metal complexes; however, some of these complexes suffer from unpredictable reactivity (such as isomerization) or from catalyst decomposition under the reaction conditions required for catalysis. Therefore, the development of water soluble multidentate bis-PTA PXP (X = C or N) pincer ligands and subsequent metal complexes could lead to a new and useful class of catalysts for a variety of transformations in either aqueous or biphasic media. Specifically, hydrogenation of abundant, relatively inert, and cheap carbon dioxide in aqueous medium would provide a novel more environmentally benign application for such complexes.

COMMUNICATION

EVENT PUBLICITY POSTERS BY GRAPHIC DESIGN STUDENTS

Tarik Buxton, Austin Canty, Lexi Dahlstrom, Matt Guinee, Kristianna Hanson, Ezeiden Mahmoud, Corina Lugo, Faith Niuguna, Sasha Prince, Victoria Tran, Chelsea Quinn,

Faculty Adviser: Suzanne Gainer, M.F.A.

Students in CM 244: Graphic Design were given an assignment to create the publicity poster for this very event: The Celebration of Scholarship and Creativity. Using basic design principles, each student designed a unique poster which best captured the essence of the event, while remaining readable and informative. The top posters in each of the two class sections were voted on by the students and displayed here. Of these, the winning poster was chosen by Professor Suzanne Gainer in consultation with select faculty. The winning design was created by Kristianna Hanson and can be seen on display around campus.

SAGE PUBLISHERS ENCYCLOPEDIA OF GENDER IN MEDIA

Julie Frechette, Ph.D.

Professor Julie Frechette, Ph.D., Communication Department, published six entries in The Encyclopedia of Gender in Media edited by Mary Kosut, Sage Publishers. The encyclopedia critically examines the role of the media in enabling, facilitating, or challenging the social construction of gender in our society. The work addresses a variety of entertainment and news content in print and electronic media and explores the social construction of masculinity as well as femininity. In addition to representations of gender within the media, the book also analyzes gender issues related to media ownership and the media workforce. Despite an abundance of textbooks, anthologies, and university press monographs on the topic of gender in media, this publication represents the first comprehensive reference work in these areas. Dr. Frechette's separate entries focus on her scholarship in the areas of cultivation theory, gender and femininity, the beauty myth, motherhood, "tween" magazines, and the feminist scholar Susan Douglas.

COMMUNICATION SCIENCES & DISORDERS

INTERNET SUPPORTED HEARING ASSISTIVE TECHNOLOGY (HAT)*

Matthew Kennedy & Baileigh Wirzburger

Faculty Adviser: Susanna Meyer, Ph.D.

Graduate students in the Speech-Language Pathology Program of the Communication Sciences and Disorders Department created a presentation to provide information to professionals and individuals with hearing loss about new developments in hearing assistive technology (HAT). HAT that can be accessed via the internet, smartphones, tablet applications and other devices are highlighted. The products and software are designed to help individuals with hearing loss obtain equal access to spoken language and environmental sounds. The products and software have been found to help individuals with hearing loss in the classroom, the work place, the home, and other listening environments. Due to the recent increase in development of technology, there is a dearth of information on these HAT devices. Information needs to be accessible to the public and professionals.

ELVS: A COMMUNITY OUTREACH PROGRAM TO ENHANCE HEARING AND VOCAL CONSERVATION*

Courtney Mahoney & Jacquelyn Nardelli

Faculty Advisers: Ann Veneziano-Korzec, M.S., Susanna E. Meyer, Ph.D.

Students in the Speech-Language Pathology Graduate Program of the Communication Sciences and Disorders Department created a 45-minute interactive presentation for kindergarten classrooms, Ears for Listening, Voice for Speaking (ELVS). This program has been shown to be effective as evidenced by a statistically significant

increase in students' knowledge following education of anatomy and abusive behaviors of the hearing and voice mechanisms. Classroom teachers were provided with pre-teaching and post- teaching materials. To promote the ELVS Program, students were provided with stickers and letters to their parents, which included ideas that were presented and reinforced throughout the presentation. The ELVS Program collaborates with the school staff, including principals, teachers, and nurses, to effectively educate the students on behaviors that protect their hearing and voice mechanisms.

OPTOGENETIC ACTIVATION OF CENTRAL AUDITORY NEURONS **(CH)**

Maryanna Owoc

Faculty Adviser: Keith Darrow, Ph.D.

Currently, central auditory prostheses use electrical stimulation to elicit the perception of sound. The spread of electric current however has limiting effects. Optogenetic stimulation of central auditory pathways has been proposed as an alternative. To test this, Channelrhodopsin-2, a light sensitive ion channel, was delivered to the left cochlear nucleus (CN) in CBA/J mice. Following incubation, blue-light stimulation was delivered via an optical fiber to the surface of the CN. An increase in neural activity during blue-light stimulation, spanning the tonotopic axis of the inferior colliculus and auditory cortex, was verified in multi-channel recordings. These findings were consistent with histological verification of transfection across the CN. No increase in activity was observed in cases with no ChR2 expression or in controls. The data suggest that optogenetic excitation of central auditory neurons is feasible and may provide the basis for a new generation of neuroprosthetic devices.

HEAR TO YOUR FULL POTENTIAL: COUNSELING SENIORS ON LIVING WITH HEARING LOSS*

Maria Rougeau and Alexandra DeRosa

Faculty Adviser: Susanna Meyer, Ph.D.

Hearing loss is the third most common chronic health condition facing older adults. Hearing loss does not only affect communication, but may also diminish the quality of life. It also has an impact on all communication partners and relationships with others.

Students of the Graduate Program in Speech-Language Pathology of the Communication Sciences and Disorders Department visit senior centers and lead a discussion on common causes of hearing loss, solutions for living with the hearing loss, and present ideas on helpful strategies to manage hearing loss. These strategies include how to manipulate the listening environment, repair communication breakdowns, and how an individual can advocate for oneself and use speech reading. The presentation highlights options available to improve hearing such as hearing aids and hearing assistive devices for the telephone, television and in movie theaters. These presentations have been well received.

COMPUTER SCIENCE

SYNERGY: COMMUNITY PROBLEM SOLVING FROM THREE PERSPECTIVES

Sarah Brown (Communication), Matthew Fiorentino (Business), Dhmitraq Jorgji (Computer Science), Michael Ricco (Communication)

Faculty Advisers: Elizabeth Siler, Ph.D., Karl Wurst, Ph.D., Barbara Zang, Ph.D.

Three faculty and four students from Business, Computer Science and Communication tackled a West Side business community problem: Lack of communication among businesses, residents and university community on the West Side. The issues we are addressing include reduced neighborhood newspaper reporting, predominance of mom-and-pop businesses, and integration of a largely commuter campus in a residential neighborhood. Meeting weekly with the West Side Business Network (WSBN), we trained students to collect data from local businesses to create a database, developed a neighborhood website using open source software, redesigned a brochure for the WSBN, wrote profiles of local businesses for the website, and offered technology

assistance for owners. We modeled a "communities of practice" process throughout the 2012-2013 academic year. The opportunity to work as a group, outside the traditional classroom, gave us flexibility: We could respond to ideas quickly with the benefit of multiple perspectives.

HUMAN ACTIVITY RECOGNITION USING SMARTPHONE DATASET

Sooyong Choi and Sompop Suksawat

Faculty Adviser: Elena Braynova, Ph.D.

The project analyzes human activities. The dataset was collected by having 30 participants to perform their daily activities while having an internal-sensors-embedded Smartphone strapped to their waist. There are six activities:
WALKING, WALKING USTAIRS,WALKING DOWNSTAIRS, SITTING, STANDING, and LAYING.
The initial dataset contains 10299 records and is described by 561 attributes. We consider a classification problem and build a classifier for all six activity classes. The built classifiers are represented by decision trees and classification rules. We use different algorithms and evaluate efficiency of constructed solutions for each of them.

ANALYZING WATER QUALITY

Richard Hay

Faculty Adviser: Elena Braynova, Ph.D.

In this project we analyze water quality, study the attributes describing it and attempt to discover interesting patterns and relationships between the water properties. The dataset used for the study is collected by US Geological Survey and is available at http://waterdata.usgs.gov/nwis/gw. We use basic clustering methods to discover interesting patters in the data and represent the founds in rules form. We use a variety of algorithms and compare their efficiency.

PREDICTING WINE QUALITY

Jason Hintlian

Faculty Adviser: Elena Braynova, Ph.D.

The project focuses on a wine classifier. The dataset analyzed in the project describes wine quality based on their chemical make up. Wines are rated from 1 to 10, from poor quality (1) to exceptional (10). Chemical make up of a wine is defined by 11 features, such as citric acid, residual sugar, alcohol, and others. The classifiers are represented by decision trees and translated further to classification rules form. We use a variety of classification algorithms and compare efficiency for each of them for the constructed classifiers. The initial dataset contains 1500 instances. To increase computational efficiency of the problem we solve the classification problem for 100 instances randomly selected the given wine dataset.

ANALYZING MASSACHUSETTS BROADBAND DATA - WHAT DO WE KNOW?

Michael Iudiciani, Brian Labbe

Faculty Adviser: Elena Braynova, Ph.D.

In this project we study and analyze two datasets: the Massachusetts broadband dataset and a dataset from US Census. The first dataset describes the connections between towns and cities in MA while the second one describes the towns and cities themselves. The project focuses on discovery of interesting patterns relating connection properties to cities types. One of such relationships may be: How a connection speed between two cities is correlated to the population density of these cities.

USING STUDENT BLOGS FOR PEDAGOGICAL IMPROVEMENT, STUDENT RETENTION AND COURSE ASSESSMENT

Dillon Murphy, Chad Day Jr.

Faculty Adviser: Aparna Mahadev, Ph.D.

The use of weekly, reflective student blogs is a useful tool for collecting ongoing qualitative feedback about a course, whereby new pedagogy can be evaluated and adjustments can be made during the semester. A low stakes, private blog can permit a more open and documented evaluation of in-class activities than a more public discussion. By providing a non-threatening environment for feedback, the use of these blogs can be a valuable data source for pedagogical assessment and improvement. We used this blogging technique in our Data Structures course during Fall 2012 semester. Data Structures is the most challenging programming course in the computer science major in our department. Through this research project we hope to understand why students find this course difficult and come up ways to help improve retention in the course and subsequently improve the retention in the major.

CLOUD COMPUTING

Laxmikant Paropkari

Faculty Adviser: Hemant Pendharkar, Ph.D.

This research evaluates the metaphors between legacy computing, mainframe technology and cloud computing technology. The concept of check-pointing has been discussed in the paper "Evaluating Overheads of Integrated Multilevel Checkpointing Algorithms in Cloud Computing Environment" by Dilbag Singh et al., which shows that the point of control in this framework is the node. The algorithm discussed uses check-pointing technology which was originally developed for mainframe and distributed system environments. We show comparisons between virtualization and clustering as well as workload in cloud computing for web and local applications. This research also investigates popular Cloud computing software that does not use check-pointing technology. Our work uses the IBM Smart Cloud Structure.

HIRING FOR A JOB - WHAT ARE THE MOST IMPORTANT QUALITIES OF A CANDIDATE?

Yuyu Zhou

Faculty Adviser: Elena Braynova, Ph.D.

In this project we analyze data originally gathered during an academic decision-making experiment aiming at determining which are the most important qualities of candidates for a certain type of jobs. The initial dataset contains 1000 instances and is defined by five attributes. Some of the dataset attributes describe candidates quality such as experience and verbal skills. The output attribute is the subjective judgment of a decision-maker to which degree he or she tends to accept the applicant to the job or to reject him. Our project focuses on the classification problem for the output attribute. We study a variety of classification models and discuss their advantages as well as evaluate the efficiency of each constructed classifier.

CRIMINAL JUSTICE

IS CBT GIVING JUVENILE OFFENDERS A SECOND CHANCE?

Joseph Atchue, Tania Colon, Brian Haskell, Michael Dingman

Faculty Adviser: Hye-Sun Kim, Ph.D.

Cognitive Behavioral Therapy has been widely used for offenders including juveniles. "It is one of the few forms of psychotherapy that has been scientifically tested and found to be effective in over 300 clinical trials for many different disorders."(Judith S. Beck,Ph.D) CBT's main focal points are social skill development training, problem solving skills training, thinking error approach, self control training, and identifying emotions and communicating them resulting in a change in behavior. This study will evaluate the effectiveness of CBT for juvenile offenders in terms of recidivism and rehabilitation and if indeed they become productive law abiding citizens.

THE REVOLVING DOOR

Kyle Crewe, Khris Perez, Phillip Cepeda, Jasmine Ortiz

Faculty Adviser: Hye-Sun Kim, Ph.D.

The recidivism rate of drug offenders tends to be much higher than any other recidivism rate for other crimes. This leads to overcrowding in the jails and prisons. This study will examine the drug courts and the difference between using drug courts as a diversionary tactic compared to using the drug courts as a criminal sanction and probation tactic. The goals are to determine which tactic will work best and if the different drug courts should be utilized on a regular basis. We will study Massachusetts drug courts and the results of the cases locally if they are working. Most importantly we will be comparing the statistics between these two versions of the drug courts to determine which type of tactic should be taken for future drug offenders.

DIALECTICAL BEHAVIOR THERAPY: A CASE STUDY

Patrick Feeney, Paul Hassett, Jennifer Hayes, Christopher Williamson

Faculty Adviser: Hye-Sun Kim, Ph.D.

This case study attempts to examine the effectiveness of a Dialectical Behavior Therapy (DPT) program for juveniles at Hadley Assessments, in Worcester, Massachusetts. DBT, a treatment program devised in 1987 to address the needs of those suffering from borderline personality disorder, has since been modified to treat juvenile offenders. Dialectical Behavior Therapy – Corrections Modified (DBT-CM) programs have become fairly popular in the Commonwealth of Massachusetts; however, few studies exist to indicate their effectiveness in treating this target group. The research presented here was conducted to analyze the opinions of juvenile offenders, group workers, and clinicians involved in a DBT-CM program in this state. Certainly, more research – particularly research that can indicate recidivism rates of those enrolled in DBT-CM programs – is necessary to gauge the program's effectiveness more accurately. Still, this research can indicate how favorably it is viewed by those who experience it.

PROS AND CONS OF ELECTRONIC MONITORING

Casey Hippert, Jered Kent, Brent Merkel, Tanya Moir

Faculty Adviser: Hye-Sun Kim, Ph.D.

The electronic monitoring system was first used in the early 1980s, but it wasn't widely used until the 1990s when cell phones became popular. Since then it has become cost effective to use GPS monitoring systems over parole officers to keep track of an individual. One of the main reasons that electronic monitoring is preferred over incarcerating an individual is because of the overcrowded prisons. Technology isn't perfect, and there are glitches. Lack of visual monitoring and confirmation can allow for criminal activity to occur within a person's home. Electronic monitoring reduces the workload of probation officers significantly. Probation officers already have to watch over fifty to seventy individuals. The use of electronic monitoring would allow for limited resources to be used more efficiently.

OVER CROWDING IN UNITED STATES PRISONS

Kirsten Puzo, Kayci Moodie, Brittany Morales, Adam Polselli

Faculty Adviser: Hye-Sun Kim, Ph.D.

The United States has 5 percent of the world's population but 25 percent of the world's prison population. Prisons in forty states in the United States are considered to be anywhere from 100-140 percent over populated. Nearly half of the offenders are incarcerated for offenses considered to be non-violent. Overcrowding severely impacts prison administration and reduces the quality of life for inmates. Some of the possible solutions include diversion from the criminal justice system for non-violent offenses, improve rehabilitation programs, and increasing the use of intermediate sanctions. All of these aim to reduce overcrowding and recidivism.

RESCUING SUBSTANCE ABUSE OFFENDERS

Spenser Raphaelson, Neal Morrissey, Jonathan Molleur, Erik Medina

Faculty Adviser: Hye-Sun Kim, Ph.D.

Over 22 million people of the age of 12 and older suffered from a substance abuse disorder. Two-thirds of the prison population has been involved with drug use or drug-related crime. Upon re-entry into society, two-thirds of these inmates will return to prison within two or three years. How do we stop this recidivism? One way is through programs such as Salvation Army, Channing House, and Crozier House. The Salvation Army is focused more on therapeutic community style of rehabilitation with religious components. Channing House is more half-way house oriented trying to focus on supervision. Crozier House is variation of the Salvation Army and the Channing House. Our research is geared to find the more effective program for reducing recidivism of substance abuse offenders. With this research, we hope to implement a more efficient program for these specific offenders.

REHABILITATION METHODS FOR PEDOPHILES

Ashley Sikes, Zach Terrien, Riley Sullivan, Erica Torres

Faculty Adviser: Hye-Sun Kim, Ph.D.

Pedophiles are among the most feared and dangerous individuals of society. Children not only have to fear being abused by their own family members but also authority figures they learn to trust such as teachers, coaches and even religious figures. Often pedophiles are people the child knows and trust as opposed to strangers which are what children are taught at young ages to avoid. They are known to be among the most difficult to rehabilitate and have some of the highest recidivism rates compared to other offenders. This paper will explore the reasons why child molesters reoffend and if rehabilitation methods work. Many pedophiles' issues are psychological. Many of them were previously abused. They are going against societal norms but to them this is a matter of free will and their choice is perfectly normal. In general, pedophiles are usually isolated offenders that feel the need to assert control over their victims as well as have a lack of self-discipline, confidence and self-esteem. They feel they need to take matters into their own hands. Pedophiles tend to reoffend based on personal urges and the inability to control those urges.

GREAT STRIDES IN COGNITIVE BEHAVIOR PROGRAMS FOR SEXUAL OFFENDERS

Jesse Williams, Michelle St. Pierre, Jonathan Wake

Faculty Adviser: Hye-Sun Kim, Ph.D.

This presentation will include descriptions of different programs used to reduce recidivism among sexual offenders. The focus of this research is on cognitive behavioral programs and the results between offenders who complete the programs and those who do not. This study will also discuss recidivism rates between different programs offered by various organizations. Two of the programs this study will be reviewing will be the Massachusetts Intensive Parole for Sexual Offenders and the Massachusetts Sexual Offender Containment Program. It will also discuss the difference between recidivism for both sexual offenses versus non-sexual offenses with and without program completion. As a result of this study you will see that the future of cognitive behavioral therapy is promising in reducing recidivism. The study will also show that Massachusetts Coalition for Sexual Offender Management (MCSOM) is in the forefront of sexual offender cognitive rehabilitation throughout the country.

EDUCATION

THE NEUROPSYCHOLOGY OF PHONOLOGICAL DYSLEXIA*

Emily Abbondanza

Faculty Adviser: Diane Tighe Cooke, Ph.D.

This poster is about the neuropsychology of phonological dyslexia (learning disability in basic reading). Because of the complicated nature of identifying learning disabilities the prevalence of learning disabilities in basic reading cannot be accurately calculated. According to the National Association or School Psychologists,

one half of the students who receive special education services and 5.5% of all students qualify under the category of "specific learning disability" (reading, mathematics, or written language). This poster describes the neuro-circuitry of basic reading. It encompasses identification, accommodations, and interventions for students with a specific learning disability in basic reading.

THE NEUROPSYCHOLOGY OF MATH DISABILITIES*

Melanie Cabral

Faculty Adviser: Cook Diane Tighe Cooke, Ph.D.

This presentation examines the characteristics and causes of math disabilities as well as the involvement of the brain. Insights and strategies for working with students who have a math disability are reviewed

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DIVERSITY AND MULTICULTURALISM: THE IMPACT OF SERVICE LEARNING AND FIELD WORK ON BUILDING TEACHING AND LEADERSHIP SKILLS OF PRE-SERVICE TEACHERS

Erin Desmarais, Jessica Xavier

Faculty Adviser: Sue F. Foo, Ph.D.

With the increase in diversity in public schools today comes the challenge of teaching students who come with learning styles intrinsic to diverse cultural upbringings. Teachers of the future need to transcend the traditional teaching role and become more versatile, patient and models of community leadership. Are teacher preparation programs across the country developing these skills within their pre-service teachers? Are these programs preparing teachers to meet the rigorous demands of such environments? Are they doing everything they can to ensure that the social, political, ethical, and multicultural needs of America's diverse student population are being met? These questions are at the root of inquiry in the action research project titled: Diversity and Multiculturalism: The impact of service learning and field work on building teaching and leadership skills of pre-service teachers.

HELPING STUDENTS COPE WITH STRESS VIRTUALLY*

Stephanie Desmarais

Faculty Adviser: Denise R. Foley, Ed.D.

Using a wireless laptop computer, this presentation highlights a website co-created by a school psychology practicum (2nd year) student designed to address two "givens" about children and adolescents in grades K-12: their levels of stress are rising and their use of the Internet is exploding. Easily accessible and user friendly, the purpose of the website is to educate students about stress, coping skills, emotions, and the physical signs of stress. There are also independent activities that students can do in order to evaluate and explore their stress such as rating scales and relaxation techniques. This website is free and may be accessed by students independently, regardless of whether they have formal counseling supports inside or outside of school. Participants will not only learn about the utility of the website but also be able to access and thus give feedback on the website.

PREDICTING MCAS SCORES USING MATH CBM MEASURES

Denise R. Foley, Ed.D.

Unique relative to tools, data type and target population, this poster summarizes the first year's results of a longitudinal study using early elementary math-CBMs performance to predict Massachusetts MCAS test scores. Strong correlations and initial multiple regression analyses predicting future high-stakes scores will be shared. Participants will understand: 1) how this research may have national implications; 2) its role in a K-6 school RTI evolution; 3) the consequences of high stakes testing; and 4) previous research on and future directions in the prediction of high-stakes test performance.

THE NEUROPSYCHOLOGY OF WRITTEN LANGUAGE*

Robyn Kenney

Faculty Adviser: Diane T. Cooke, Ph.D.

The purpose of this poster is to provide an overview of the neuropsychology of written language. Topics of discussion include the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) criteria for Disorder of Written Expression, skills associated with the development of appropriate writing abilities, cognitive structures impacting written language abilities, and accommodations and modifications for students developing written language skills and those with a disorder of written language (WLD).

THE NEUROPSYCHOLOGY OF DRUG ADDICTION*

Alison McCarthy

Faculty Adviser: Diane Tighe Cooke, Ph.D.

Drug addiction, also referred to as substance dependence, takes form as a compulsive drive to take a drug despite serious adverse consequences (DSM-IV-TR, 2004). Prior to recent advances in science and research, addiction was viewed as "bad choices" that were made voluntarily by an individual. However, recent studies have shown that continued drug use leads to long lasting changes in the brain that undermine voluntary control (Volkow & Li, 2004; Woicik, et.al., 2009; Goldstein & Valkow, 2002). One of the most consistently associated neurotransmitters of drug addiction is dopamine. Research indicates drugs such as cocaine, amphetamine, methamphetamine and ecstasy increase dopamine by inhibiting dopamine reuptake or promoting dopamine release through their effects on dopamine transporters (Volkow & Li, 2004). Drug addiction then has been conceptualized as a disorder that moves from impulsivity to compulsivity in a cycle of addiction compromised of preoccupation/anticipation, binge intoxication, and withdrawal/negative affect.

TEACHER PERCEPTIONS OF RTI IN A LOCAL PUBLIC ELEMENTARY SCHOOL*

Janelle Welsh, Stephanie Kunst

Faculty Adviser: Denise R. Foley, Ed.D.

Response to Intervention (RTI) is a broad term describing integrated practices of providing high quality instruction, differential effective supports, and universal screening and frequent progress monitoring in order to make data-based decisions to meet both academic and non-academic needs of all students. For many school across Massachusetts, moving towards RTI constitutes major systems change. Research shows that educator "buy-in," as well as, positive self-perceptions of skills are needed for the successful implementation of RTI models. Staff at a local suburban elementary school were surveyed after the second full year of implementation of an RTI model. This poster will describe educator self-perceptions of their assessment, interpretation and intervention skills, as well as, their perceptions about RTI and the development and implementation of the RTI local model. School psychologists' roles in program development, implementation and evaluation, and the "next steps" at the building and district level will be shared.

ENGLISH

YOUNG WOMEN'S VOICES: READINGS FROM EMERGING WSU WRITERS**

Taylor Specker, Jennifer Beckwith, Anna-Lisa Norman, Ash Saraga

Faculty Adviser: Matthew Ortoleva, Ph.D.

This performance-reading features four young women from the English Department who will share their writing with an audience. These women represent the strength of young feminist writers emerging at Worcester State University. Their readings, a mix of genres, will reveal a complex, often confused view of the world, but one guided by the principle of living life out loud.

MATHEMATICS

APPLICATIONS OF NUMBER THEORY
Brittany Rivard, Marie Jezierski, Bryan Gregoire, Oliver Hammerle, Wesley Hebert, Zach Tremblay, Karolina Jakobkiewicz
Faculty Adviser: Mike Winders, Ph.D.
In the past, Number Theory was thought to be one of the most 'pure' forms of mathematics, in the sense that it had no applications in the real world. How times have changed! With the advent of high-powered computers Number Theory is currently one of the most applied branches of mathematics, and we investigate two such applications here. One application is purely recreational, a game whose optimal strategy is based on the theory of congruences. Another application, called RSA encryption, is widely used to communicate information in a secure manner.

NURSING

SKIN CANCER AWARENESS, DUXBURY BOARD OF HEALTH, DUXBURY, MASSACHUSETTS*
Tammy Aiguier
Faculty Adviser: Stephanie Chalupka, Ed.D., Gina Marie Fleury, M.S.N.
As a senior graduate student in the Community Health Nursing track, I have interned at the Duxbury Board of Health in Duxbury, Massachusetts. I collaborated with Board of Health members to identify areas for health promotion in order to provide education to community members. Specific sections of my poster include:
-information about skin cancer awareness, facts and ways to protect oneself
-my specific role as an intern, including passing out free sunscreen samples at the beaches, town camp, swimming pool and various other locations throughout the town; an interview for the local newspaper and a presentation at the senior center
-a section on "What the residents had to say"
-conclusion, including an oral presentation I gave at the Hinton State Laboratory (I was one of four interns selected to give an oral presentation)

PUBLIC HEALTH NURSE POSTER: SPIRITUALITY AND THE ELDERLY IN THE HEALTH CARE SETTING*
Deborah Nolet Ballou, M.S.N.
Faculty Adviser: Deborah Chaulk, Ph.D.
The subject of spirituality and the elderly in the healthcare setting is an inexact but much researched one. Though spiritual care is part of nursing practice, is it effective or relevant to good patient outcomes? With nursing process are spiritual care measurement tools to rate how well outcomes were met. Proponents for and against the inclusion of spiritual care in modern nursing both have valid reasons for their positions. In order to guide nursing in the proper path regarding spiritual care of elderly patients, the public health nurse must continue to pursue knowledge to gain understanding in this area
Description- The Poster Presentation will be a visual, two-dimensional, informative display on large scale poster board in order to share and impart knowledge about nursing aspects of the dynamic of spirituality of elderly patients in the health care setting.

CHEMICAL SOUP: ENVIRONMENTAL HEALTH LITERACY*
Lisa Chan, RNC-OB
Faculty Adviser: Stephanie Chalupka, Ed.D.
Background: Very limited legal requirements and regulations exist for listing ingredients on the labels of household products in the U.S. We may be exposed to numerous chemicals from using common household products. Purpose: Nurses play an important role in improving environmental health literacy about consumer

products, and in translating scientific information so that it is easier for people to understand. Method: The Consumer Product Literacy Project was an interactive pilot program designed to help graduate nurses learn the basics of how to: read ingredient labels on common household products, identify ways that three groups of chemicals may affect health, make an All-Purpose Cleaner, and identify available resources and safer alternatives. Discussion: Follow-up comments showed that nurses had increased awareness of the topic, and were more likely to share this information with others and incorporate into their practice.

FEMALE COLLEGE STUDENT AWARENESS OF EXPOSURES TO ENVIRONMENTAL TOXINS IN PERSONAL CARE PRODUCTS AND ITS EFFECT ON PRECONCEPTION HEALTH*

Lisa Chan, RNC-OB

Faculty Adviser: Stephanie Chalupka, Ed.D.

Background: Exposures to environmental toxins in personal care products raise health concerns for women of childbearing age around the world because many products contain numerous chemical ingredients that have been known to affect reproductive health, fertility, and cause birth defects; some have also been associated with hormone disruptions and chronic conditions including: cancers, neurological, developmental problems, and asthma. Most consumers are likely unaware of the bio-accumulative risks that exposure from daily use of these products pose. Purpose: The objective of this study is to describe what female students know about environmental toxins in personal care products, and the effect these products may have on preconception health. Methods: A sample of 72 female students, ages 18-24 years old, who major in Nursing, Psychology, and Communication Sciences and Disorders were surveyed. Results: Preliminary findings discussing exposures and what young women know about associated health risks will be displayed.

BREASTFEEDING EQUITY – A CONCEPT ANALYSIS*

Ginny Combs

Faculty Adviser: Roseann Barrett, Ph.D.

The concept of Breastfeeding Equity is born from the experiences and challenges that the majority of women face in the United States today as they work to actualize their breastfeeding goals. It is well documented how equity is related to health care outcomes and this same focus can be applied to comprehend the whole of the lived breastfeeding experience across the broad socioeconomic spectrum. The purpose of the analysis is to explore the concept of equity as it applies to breastfeeding as a way to understand the areas of breastfeeding support, promotion and protection.

Placing equity as a framework for breastfeeding can influence how we work within the 3 areas of promotion, support and protection. Equity re frames the issue to a broader discussion including the macro environment with its lack of protective policies for women and infants.

THE EDUCATION OF THE PROFESSIONAL NURSE*

Lisa M. Gaudette, R.N., M.S.(c)

Faculty Adviser: Stephanie Chalupka, Ed.D.

With the Affordable Care Act of 2010, the nursing profession is in a unique position to become leaders in forming and implementing changes to our healthcare system. Unfortunately, the majority of nurses hold only an Associate's Degree in Nursing. Community colleges, universities, healthcare organizations, and professional organizations have called for the profession to support nurses to become lifelong learners.

Highly valued and skilled, nurses have a positive impact within the healthcare community. The nursing shortage that will continue to grow as nurses retire and baby boomers age. The more education one has, the better prepared we are to address the needs of the acute and chronically ill, as well as become leaders, educators, policy writers, and researchers within our profession.

RETURN ON INVESTMENT: THE KEY FOR INDIVIDUAL WELLNESS AND HEALTHCARE COSTS SAVINGS*

BAHATI GELIGA, R.N.

Faculty Adviser: Gina Marie Fleury, M.S.N.

As health care organization and individuals continue to face ongoing economic challenges, the Return On Investment (ROI) could be a solution to help solve the economic problems. The Informatics (2013) defines Return on Investment as the performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. ROI can be calculated by dividing the benefit of an investment by the cost of it.

If the United States and communities investing in health, it will help solve the healthcare economic challenges by saving money and improving people's health. The individuals' lives can be saved by utilizing preventative measures like disease management, immunizations, and adopting a healthy lifestyle. Actually, the implementation of Return On Investment would reduce the trillions of dollars of annual healthcare costs in the USA, including out of pocket medical bills meanwhile decrease the number of preventable diseases.

INTIMATE PARTNER VIOLENCE: IMPLICATIONS FOR NURSING PRACTICE*

Mary Kalmanovitch

Faculty Adviser: Stephanie Chalupka, Ed.D., Deborah Chaulk, Ph.D., Gina Marie Fleury, M.S.N.

Introduction: Intimate partner violence is a worldwide phenomenon.

Background: Victims of intimate partner violence (IPV) access health care facilities twice as often as women who are not victims (Tower, Rowe & Wallis, 2012). Nursing is often the first contact, and can potentially affect the outcome of the encounter. Nursing is predominantly a female profession, and may reflect the US statistic of 1 in 4 women who experience intimate partner violence in their lifetime (Black et al, 2011).

Method: This poster reviews ten articles describing studies of nurses involvement with intimate partner violence. The studies show that exposure to IPV affects the nurse, in professional and home life, interventions which may be useful, and identifying IPV's who access healthcare or staff who may be victims in the work place.

Results: The conclusions and implications for nursing practice were quite homogenous. Training and education are hampered by the lack of an evidenced based curriculum.

Conclusion: Valid studies have been completed and suggest the basis for an evidenced based curriculum.

AN EXAMINATION OF TRENDS IN VACCINE POLICY*

Patricia Moran

Faculty Adviser: Stephanie Chalupka, Ed.D.

From the beginning, vaccines have seemed to reflect not just our growth as a medical society, but also our fears, prejudices and political views. The observed and anecdotal effect of vaccine was largely all the evidence that medicine and society had as mandatory vaccine programs began in this country. This was equally true for those opposed to vaccination. Now, over a hundred years since the first vaccine programs began, they are still not without opposition. The right of the government to mandate vaccine programs has been upheld in the courts as being necessary. As the battles for our health care reform laws show, Americans still want to decide healthcare for themselves and want as many choices as possible to be kept out of the hands of government. This paper will examine trends in vaccination and the potential impact that health care reform could have on the vaccine program.

OCCUPATIONAL THERAPY

COLLEGE STUDENTS' INTERACTION WITH PEERS WITH PHYSICAL DISABILITIES*

Erica Allen, OTS

Faculty Advisor: Joanne Gallagher Worthley, Ed.D.

Objectives. The purpose of the study was to identify the type and frequency of interactions that non-disabled students have with their peers with physical disabilities across three contexts: work, school, and club/team settings.
Methods. This study used a descriptive, non-experimental, and quantitative design. The instrument used was a structured, anonymous survey distributed online.
Results. The results of this study are somewhat inconclusive due to the small sample of participants. There were very few participants that had experience with a peer with a physical disability in a non-academic setting such as a club, team or group.
Conclusion. This study found that there was a lack of exposure to individuals with physical disabilities among college students in multiple settings. Further research needs to be done to determine the reliability of the results found in this study and to identify the causes and solutions to this current trend.

PARENTS' PERSPECTIVES OF VIDEO HOME THERAPY PROGRAMS*

Amanda Caramanica, OTS

Faculty Adviser: Joanne Gallagher Worthley, Ed.D.

Objective: The purpose of this study was to examine the benefits of children's home programs in video form on parents' cell phones.
Methodology: Sixteen parents participated in this study and videotaped their children's home programs with their therapists on their cell phones. Participants followed the home program in video form for one week. Parents were asked to fill out pre- and post-test surveys based on their perspectives of their children's home programs.
Results: Participants reported their children followed their home programs more often in video form and took less time to do so. Additional results suggested video home programs fit into parents' daily schedule better and increased their level of compliance.
Conclusion: Video home therapy programs can offer parents struggling to comply with their children's home program an easier alternative. Increased compliance following video home therapy programs can lead to greater benefits from occupational therapy services.

ACADEMIC SUCCESS IN STUDENT ATHLETES*

Sarah Cozzens, OTS

Faculty Adviser: Joanne Gallagher Worthley, Ed.D.

Objective: The purpose of this study was to see if there was a positive relationship between participating in a sport during the academic year and a student's academic success.
Methods: Thirty student-athletes from Worcester State University participated in the study by completing a survey which evaluated their success based on three criteria: time management, motivation, and academic performance.
Results: Many of the student-athletes reported that playing a sport increased their academic performance. Females were better able to manage their time, had higher motivation, and had higher GPAs than the males.
Conclusion: Participation in an athletic sport has the potential to positively benefit students academically. Occupational therapists could benefit from this study knowing that participation in physical activities could benefit students in becoming more successful academically.

HOW MULTIPLE SCLEROSIS AFFECTS QUALITY OF LIFE AND PARTICIPATION IN LEISURE ACTIVITIES*

Sarah Fulginiti, OTS

Faculty Adviser: Joanne Gallagher Worthley, Ed.D.

Objective: The purpose was to discover how Multiple Sclerosis affects quality of life and participation in leisure activities by focusing on the length of time diagnosed and severity of symptoms.

Methodology: A short online multiple-choice survey was distributed through the National Multiple Sclerosis Society's website. Questions pertained to symptom severity and effects on leisure participation.

Results: One hundred forty participants completed the online survey. Weakness (56.4%, n=79) and fatigue (69.3%, n=97) were considered the most highly interfering symptoms in regards to leisure participation. Most participants felt they participate less in leisure activities compared to earlier stages of diagnosis and are currently somewhat involved in leisure.

Conclusion: Fatigue and weakness hinders leisure performance, so it is important for OT to address those symptoms within all occupations. MS severity varies amongst individuals. It is important to learn about the individual's needs and create appropriate interventions.

BENEFITS OF ZUMBA® FITNESS CLASSES*

Ashley Harvey, OTS

Faculty Adviser: Joanne Gallagher Worthley, Ed. D.

Objective. The purpose of this study was to determine the benefits that motivate participants to engage in Zumba® fitness classes.

Methods. A convenience sample of 22 female participants who routinely engage in Zumba® fitness classes were surveyed. Participants rated their experience with Zumba® Fitness based on psychological, physiological, and situational factors following a Zumba® class.

Results. Positive ratings were shown based on all psychological, physiological, and situational factors as reasons for continual engagement. A total of 59.1% found that it increased their energy, about 86.4% rated that it made them feel more fit, and 90.9% rated that they would rather exercise with others vs. alone.

Conclusion. Zumba® fitness classes provide many beneficial factors that can enhance quality of life. Occupational therapists may want to consider offering Zumba® fitness classes for their clients if deterioration in psychological and physiological factors is present.

THE INFLUENCE OF EARLY INTERVENTION ON THE PARENT-CHILD RELATIONSHIP*

Melissa Henderson, OTS

Faculty Adviser: Joanne Gallagher Worthley, Ed.D.

Objective. The purpose of this study was to examine the impact that early intervention (EI) services had on parent-child relationships.

Method. Surveys inquiring about the influence of EI were distributed via the Kennedy Donovan Center in Southbridge, Massachusetts to families of children receiving these services.

Results. Eighteen mothers indicated that the EI services their children were receiving helped to enhance the relationship with their child in a variety of ways.

Conclusion. Through early intervention services, the parent may be influenced individually, the interactions between parent and child may be of a better quality and higher quantity, the quality and intimacy of the relationship may increase and the parent knowledge provided can help parents to be more understanding and accepting of their child.

INFLUENCES, CHALLENGES, AND BENEFITS OF THE FIELDWORK SUPERVISOR*

Rachel Herbert, OTS

Faculty Adviser: Joanne Gallagher Worthley, Ed.D.

Purpose. The purpose of this study was to identify what factors influence occupational therapists to become fieldwork supervisors and determine the challenges and benefits that they experience supervising students during fieldwork.
Methods. This non-experimental, quantitative design included 31 occupational therapists with experience supervising students during Level I and/or Level II fieldwork. Participants completed an anonymous, online survey that was emailed to them to complete at their own leisure.
Results. Reasons for becoming a fieldwork supervisor were feeling obligated and giving back to the profession, place of employment, coworker influence, interest in teaching, and being motivated to influence the profession. Challenges most frequently reported were the increased workload and time commitment associated with the role. Participants reported the opportunity to teach, keeping skills current, enhancing clinical reasoning skills and increasing one's knowledge base to be the most beneficial.
Conclusion. Findings emphasize the importance of the fieldwork supervisor's perspective regarding fieldwork education in an effort to enrich the experience for students and the clinicians involved.

PERCEPTIONS OF CULTURAL COMPETENCE IN OCCUPATIONAL THERAPY STUDENTS*

Devon B Jubrey, OTS

Faculty Adviser: Joanne Gallagher Worthley, Ed.D.

Objective: The purpose of this study was to identify the perceptions of and factors that affect cultural competence in occupational therapy students.
Methods: A convenience sample of Worcester State University undergraduate and undergraduate-level post-baccalaureate occupational therapy students participated in the study and completed the Cultural Awareness and Sensitivity Questionnaire.
Results: A sample of 118 occupational therapy students showed that 92.4% and 91.5% believed that educational training and fieldwork, respectively, could affect levels of cultural competence. Generally, most participants reported a moderate to full level of cultural awareness, however there were still a number of participants with some level of unawareness.
Conclusions: Educational training and fieldwork experience have the potential to impact occupational therapy students' levels of cultural competence. Including cultural competence in occupational therapy curriculum is important to prepare students for a diverse population.

THE RELATIONSHIP BETWEEN INTERNET USAGE, LIFE SATISFACTION AND HAPPINESS IN OLDER ADULTS*

Barbara Klett, OTS

Faculty Adviser: Joanne Gallagher Worthley, Ed.D.

Objective: The purpose of this study was to determine if and how the use of the Internet affects happiness and life satisfaction in older adults.
Methods: A survey was distributed to a convenience sample of 26 older adults at a local senior center. Quantitative data regarding types and amount of Internet usage were collected along with data regarding perceived happiness and satisfaction.
Results: The sample consisted of community dwelling older adults aged 63 to 93. The Internet activities used most often were communication and information gathering. These activities were found to increase happiness and life satisfaction within this population. The results showed a direct relationship between happiness and satisfaction as perceived by these adults.
Conclusion: Internet use is an effective means of increasing happiness and life satisfaction in older adults. Since happiness and life satisfaction are linked to overall health, occupational therapists should utilize this tool to benefit older adults.

THE PHYSICAL EFFECTS OF LAPTOP USE*

Angela Mascioli, OTS

Faculty Adviser: Joanne Gallagher Worthley, Ed.D.

Objective. The purpose of this study was to examine if students' posture while using laptops caused musculoskeletal pain and if they were following ergonomic guidelines while using their laptops.
Method. A convenience sample of students at Worcester State University was given a self-questionnaire survey. The students were asked about posture, pain, where their laptop is used the most, and about the ergonomics of their posture.
Results. A sample of 77 students showed that 94.8% of the students surveyed do not have proper training in the ergonomic use of a laptop. Improper use of a laptop was demonstrated by 66.2% of students surveyed had a monitor lower than eye level and 92.2% of students reported leaning forward while using their laptops. The majority of students reported feeling pain in their neck, back, or eyes at least some of the time while using their laptop.
Conclusion. The results of the survey distributed on laptop ergonomics has found that students required more training about proper ergonomics while using a laptop. Occupational therapy is implicated due to the technological advances and for prevention of discomfort and cumulative trauma disorders.

PROMOTION OF THE QUALITY OF SOCIALIZATION AT MEALTIMES IN AN ASSISTED LIVING FACILITY: AN EXPLORATORY STUDY*

Cristina Michetti, OTS

Faculty Adviser: Joanne Gallagher Worthley, Ed.D.

Objective. This exploratory study examined the attitudes of residents in an assisted living facility on the current level of socialization that occurs in the dining room context during mealtimes.
Method. The primary investigator interviewed a volunteer sample of seven residents and used narrative analysis and open coding to produce recommendations based on the feedback from the sample.
Results. Six overall themes were identified: general satisfaction and acquired complacency, sense of powerlessness in decision making, view of mealtimes as a secondary social arena, spatial and environmental barriers, disinterest in family-style dining, and desire for the inclusion of music at suppertime.
Conclusions. Promotion of universal design, reduction of clutter, active pursuit of resident feedback, and provision of education to staff and residents on assistive technology and ergonomic positioning facilitating independence in self-feeding can allow for residents to experience the social meaning that they once equated with mealtimes within the community.

ENHANCING THE QUALITY OF LIFE OF OLDER ADULTS USING YOGA*

Jaclyn Slack, OTS

Faculty Adviser: Joanne Gallagher Worthley, Ed.D.

Objective: The purpose of this study was to examine whether participation in the occupation of yoga positively affected quality of life of older adults.
Methods: Twelve older adults at an assisted living facility participated in the study by attending five one hour yoga sessions and taking a pretest and posttest regarding quality of life.
Results: Participants improved in physical areas, psychological areas, and sleep which are aspects of quality of life. Participants reported better function, flexibility, balance, self-awareness, and many aspects of sleep.
Conclusion: Participation in the occupation of yoga has potential benefits for older adults. Occupational therapists can consider incorporating yoga into treatment to increase quality of life if they are knowledgeable of yoga and if the situation is appropriate.

THE IMPACT OF DRIVING CESSATION ON OLDER ADULTS' QUALITY OF LIFE*
Alyssa Wilson, OTS
Faculty Adviser: Joanne Gallagher Worthley, Ed.D.

Objective: The purpose of this study was to examine the impact that driving cessation has on older adults' occupational performance and emotional wellbeing.
Methods: Fourteen older adults participated in the study and filled out a survey containing 16 questions related to their personal experience with driving cessation. The survey took approximately 10 minutes to complete. All of the volunteers who participated were recruited at a senior center or an assisted living facility in Worcester, Massachusetts.
Results: A total of 50% of participants stated that their occupational performance was not impacted by driving cessation; 35.7% of participants agreed or strongly agreed that their occupational performance was impacted. The remaining participants (14.3%) neither agreed nor disagreed that their occupational performance had been impacted by driving cessation. The majority of participants (78.5%) indicated that they are not depressed as a result of driving cessation. In addition, 71.4% of participants stated that they do not feel isolated since they stopped driving.
Conclusion: Driving cessation increases the need for emotional support and transportation assistance. It is essential that older adults who are having a difficult experience receive occupational therapy treatment to address community mobility issues and effective coping strategies.

PHYSICAL AND EARTH SCIENCES

STONE WALL MAPPING IN WELLS STATE PARK
George Andrews, Ronald Salmonson
Faculty Adviser: William Hansen, Ph.D.
Stone walls, a ubiquitous feature of the New England landscape provide a unique visualization of the colonial property and farm divisions during the 17th and 18th century. The diversity of these walls gives insight on the specific purpose and land use of the surrounding property at the time. This research uses mobile data collection to analyze the spatial distribution and attribute data of the stone walls at Wells State Park in Sturbridge, Massachusetts. The wall types and their implementation were identified and overlaid on a map along with measurements of their height and length. The results provide a current glimpse of the status of stone walls in New England and can facilitate further research in the subject area.

X-RAY FLUORESCENCE STUDY OF 18TH AND 19TH CENTURY SILVER COINS
Matthew Fiorentino
Faculty Advisers: Sudha Swaminathan, Ph.D., Frank Lamelas, Ph.D.
In x-ray fluorescence, a sample is irradiated with x rays. Atoms in the sample absorb the x rays and then emit other x rays with energies which are characteristic of the chemical elements within the sample. The elemental compositions of seven coins dating from the 1770s to the 1830s were studied using x-ray fluorescence. We aimed to answer the following questions. Do coins from a similar time period, but from different parts of the world have different elemental compositions? What elements in addition to silver are typically found in a silver coin? What is the elemental composition of a coin that looks like it is made of silver, but is known to be an imitation? Results of the x-ray fluorescence study will be incorporated into PY 112, Physics in Art. Through this project the results of undergraduate research are integrated into an introductory science course.

THE NATURE OF THE CONCRETE JUNGLE: POTENTIAL FOR GREEN SPACE IN WORCESTER**
Michael Gallotta
Faculty Adviser: William Hansen, Ph.D.
Since its incorporation as a city in 1848, Worcester's urban landscape has evolved greatly. Over the years, it has endured both the ups and downs of a capitalist economy constantly in flux. Businesses trade hands, technology evolves, and the 21st century brings about an age of uncertainty for Worcester's old manufacturing sector. Much of the land now is abandoned; though sitting idle does not necessarily mean useless. As seen in many other cities like London and Copenhagen, the "greening" of urban vacant land preserves nature in a dense concrete jungle, and can also have great positive environmental impact. Using spatial analytics and land use data, the potential for "greening" in these particular areas can be easily defined.

BROKEN SWINGS AND BROKEN DREAMS: PLAYGROUNDS IN WORCESTER
Gregory Gorski
Faculty Adviser: William Hansen, Ph.D.
Recreation has important effects on the health of people. However, the availability of recreation is frequently tied to level of income in the area. This paper studied the availability and quality of playground spaces within the city of Worcester, MA. Individual playgrounds were studied for the quality and quantity of their equipment (working swings, slides, standing surfaces) via field observation. The locations of the playgrounds were then compared to census income data to compare whether wealthy areas had more or closer playgrounds. A comparison of the quality and quantity of the playground equipment to the neighboring census income data was also made to see whether wealthier areas had "better" playgrounds.

AIR TRAVEL OPTIONS IN A CHANGING MARKETPLACE: A CASE STUDY ON THE CENTRAL NEW ENGLAND AIRPORT SYSTEM
Oscar Martinez
Faculty Adviser: Stephen Healy, Ph.D.
Between 2000 and 2012, the consolidation of flight networks by legacy carrier mergers and buyouts, and the growth of low-cost carriers, has shaped airline choice and destinations available to business and leisure travelers. The evolution of the flight networks for the four major airports serving Central New England – Boston, MA; Hartford, CT; Manchester, NH; Providence, RI - were analyzed by using FCC data in order to determine how these four airports were connected by carriers to various destinations in 2000, 2003, 2006, 2009 and 2012. Total passenger volume from each airport was also considered in relation to each of these sample points. While reductions in destinations and air passenger services prevailed in legacy airlines, the growth of low-cost carriers offset these net losses. This analysis highlights the local impacts of national changes in the airline industry.

MELTING ANTARCTICA: CLIMATE CHANGE AFFECTING ANTARCTIC ICE AT LOWER ELEVATION **
Eric Moir
Faculty Advisers: Doug Kowalewski, Ph.D., Stephen Healy, Ph.D.
Atmospheric CO2 levels are expected to double by the end of the century, causing a temperature rise of 2-3.5°C. Paleoclimatic evidence suggests the temperature increase will be 2-5 times this rate at the poles, putting Antarctica at risk of dramatic ice melt. As the warmer temperatures move inland they will also begin to move vertically, blanketing the face of the continent and surrounding ice sheets. The increase in temperature will destabilize the Antarctic Ice shelves, allowing the glaciers behind it to push their way to the ocean, effectively raising sea level. This study utilizes the Goddard Institute for Space Studies (GISS) General Circulation Model II (GCMII) climate simulator to create data and extrapolate from that data the areas and elevations of Antarctica that will be susceptible to melt by the end of this Century.

THE CEMETERY AS AN ECOLOGICAL LANDSCAPE: CARBON SEQUESTRATION AND GREEN INTERMENT ALTERNATIVES

Kyla Palubinskas

Faculty Adviser: Stephen Healy, Ph.D.

Cemeteries are spaces for interring the dead. While contemporary interment practices utilize methods which deplete scarce resources and contribute to environmental degradation, cemeteries themselves perform vital ecological services: habitat preservation, species conservation, and carbon sequestration. In this study we calculate amount of carbon sequestered in two cemeteries: a managed tree stand in Mount Auburn Cemetery in Cambridge, Massachusetts and an unmanaged tree stand in Rural Cemetery in Worcester, Massachusetts. The sequestration rates from both cemeteries are compared to the overall sequestration rate of Harvard Forest—an unmanaged and previously studied wooded area—to show the potential of cemeteries to remove carbon from the atmosphere. These results highlight the role that cemeteries can play in providing ecological benefits to the wider communities that surround them, making a case for comprehensive conservation and cemetery management practices associated with green burial practices.

ASSABET RIVER WILDLIFE REFUGE: FACILITATING PUBLIC ACCESS ON A CONTAMINATED MILITARY BASE

Cynthia Pratt

Faculty Adviser: William Hansen, Ph.D.

The reduction in the number of military bases nationwide have offered the opportunity to convert these extensive areas into open space such as wildlife refuges. An important issue in this process is the danger to the public due to contamination and structural hazards such as collapsed buildings and barbed wire. Using historical aerial photos and site maps from the US EPA remediation activities a guide and trail map for the Assabet River National Wildlife Refuge. This guide includes warning on hazards to allow the public to remain safe while exploring the refuge.

HOW LOCAL IS YOUR FARMERS' MARKET?

Katelyn Rozenas

Faculty Adviser: William Hansen, Ph.D.

Farmers' markets provide a convenient resource of fresh local foods, serving as a catalyst which connects farmers to nearby consumers. The distance each farmer has to travel to the market varies, affecting the "locality" of the produce. This analysis analyzed how far farmers actually travel to each farmers' market within Worcester County. Farmers' market data was obtained from the Massachusetts Department of Agricultural Resources. A Geographic Information System was then used to analyze the distance between farms and farmers' markets. This analysis discovered that all produce sold at farmers' markets in Worcester county is locally grown, given that the average distance farmers travel is less than 100 miles.

A REASON TO KEEP IT LOCAL: WHY PEOPLE SHOP AT FARMERS' MARKETS **(CH)** **

Katelyn Rozenas

Faculty Adviser: Pat Benjamin, Ph.D., Stephen Healy, Ph.D.

Farmers' markets are the oldest form of direct marketing, acting as a catalyst to connect local farmers and consumers. Throughout the last decade farmers markets have proliferated nationwide in both rural and urban areas. This study examined the reasons why people are drawn to these farmers' markets as opposed to other retail settings. A non-probability convenience sampling survey was administered at the Beaver Brook Chandler Street farmers' market in Worcester, Massachusetts in an effort to ascertain why people shop at farmers' markets. An analysis of this data revealed four prominent reasons as to why people attend the market: the quality/freshness of food, support for local agriculture, support for local business and knowledge of where the food originates. These results will be used to promote the farmers' markets in Worcester, by helping farmers to better understand the motives of farmers' market shoppers.

BEDROCK OF WORCESTER COUNTY

Mohammed Saloh

Faculty Adviser: William Hansen, Ph.D.

The geological information of a specific locality can be useful in variety of fields; including education. Mineral identification is the first step to study the history of earth and learn more about the origins of different localities. The outcrops that exist on the surface allow researchers to examine these minerals and study the factors that may have affected them. The examination of the existing outcrops allows researchers to gather data about the history of chemical and physical changes that may have taken place throughout the history of earth. Geographic Information Systems was used to analyze and show the data collected from U.S. Geological Survey and the field pictures for educational purposes.

CRUMBLING BENEATH OUR FEET: HOW THE ECONOMIC DOWNTURN HAS AFFECTED ROADWAY MAINTENANCE

Amy Silberman

Faculty Adviser: William Hansen, Ph.D.

Maintaining the crumbling transportation infrastructure is a focus of both federal and state funds. The recent economic downturn has had an impact on the amount of street resurfacing that can be done each year. The number of miles of roadway resurfaced in the city of Worcester during the fiscal year was analyzed using a Geographic Information System has shown a correlation between the economy and infrastructure maintenance. The analysis covered 2006 through 2012, and analyzed miles paved, budget dollars as well as road ownership. Results showed that as budgets were cut at state and federal levels, the amount of maintenance was cut as well.

INFLUENCE OF WSU STUDENT EMISSIONS ON ATMOSPHERIC CARBON DIOXIDE CONCENTRATIONS

Sean Wadden

Faculty Adviser: Allison Dunn, Ph.D.

Approximately 13 percent of anthropogenic greenhouse gas emissions come from burning fossil fuels for transportation. A significant portion of WSU students drive to class, and usually drive alone. The purpose of this study was to analyze CO2 concentration data from WSU at varying times to discern if there is an influence of commuter student emissions on atmospheric CO2 concentrations. CO2 concentration data have been collected from the top of the Ghosh Science and Technology building since April 2011. To ensure precision the system was automatically calibrated every 6 hours with calibration gases traceable to NOAA/CMDL standards. Meteorological data was also recorded, such as wind speed and wind direction, which can influence local CO2 concentrations. To evaluate the impact of WSU commuting patterns on the atmosphere, we analyzed CO2 concentrations at varying times when classes were in session and when they were not.

LAND USE ANALYSIS ON QUABOG LAKE AND LAKE QUACOMQUASIT WATERSHEDS

Sean Wadden

Faculty Adviser: William Hansen, Ph.D.

Lakes Quabog and Quacomquasit are a pair of lakes in Central Massachusetts prone to eutrophication due to phosphorous loading. This has resulted in algal blooms, causing these lakes to be put on the Massachusetts list of impaired lakes on multiple occasions. Land use data from Mass GIS provided information on possible agricultural and residential point and non-point sources of nutrient loading. Lake nutrient data was retrieved from Massachusetts Department of Environmental Protection as well as the Quabog/Quacomquasit Lake Association. These were both analyzed in a Geographic Information System to determine whether eutrophication of these lakes is mostly caused by phosphorous being introduced from the Spencer Waste Treatment Plant, as well as agricultural and residential non-point sources.

WATER QUALITY OF QUABOG LAKE AND LAKE QUACOMQUASIT

Sean Wadden

Faculty Adviser: William Hansen, Ph.D.

Lakes Quabog and Quacomquasit are a pair of lakes in Central Massachusetts prone to eutrophication due to phosphorous loading. This has resulted in algal blooms, causing these lakes to be put on the Massachusetts list of impaired lakes on multiple occasions. Land use data from Mass GIS provided information on possible agricultural and residential point and non-point sources of nutrient loading. Lake nutrient data was retrieved from Massachusetts Department of Environmental Protection as well as the Quabog/Quacomquasit Lake Association. These were both analyzed in a Geographic Information System to determine whether eutrophication of these lakes is mostly caused by phosphorous being introduced from the Spencer Waste Treatment Plant, as well as agricultural and residential non-point sources.

PSYCHOLOGY

PERSPECTIVES ON VIEWING ART

Amy Cota-McKinley, Ph.D., Michelle Henault, Sara Murphy, Amberly Bliss

Evaluation has been defined as a "process for obtaining information about visitors that ultimately can contribute to the effectiveness of an exhibit and its interpretive components on visitor behavior, interests, or the exhibit's ability to communicate" (Screven, 1990). A summative evaluation was conducted in the Old Masters Gallery at the Worcester Art Museum (WAM). The art in this gallery is displayed in a traditional linear format. At present, 19 paintings are on display with one exhibit object and a table. One hundred visitors were tracked in the space to establish traffic patterns and a series of questions were asked examining specific exhibit goals to determine gallery effectiveness.

EFFECT OF EMOTION REGULATION AND INFORMATION MODALITY ON RECALL OF NEGATIVE EVENTS

Erin Donohue, Ethan Anderstrom

Faculty Adviser: Vrinda Kalia, Ph.D.

Previous research has shown that video stimuli was better remembered by individuals who did not engage in expressive suppression (showed no emotions) while watching it (Richards & Gross, 2000). Using a mixed-methods design this study examined the effect of: (1) expressive emotion suppression; (2) information modality (video vs. reading) on recall of profoundly negative events. Expressive emotion suppression was the between-subjects variable and information modality was the within-subjects variable. Two groups of participants (one suppressed any emotion expression and one did not suppress their emotion expression) watched a video and read a story that elicited negative emotions and recalled their content in story form. We predicted that reading would lead to better recall and emotion suppression would influence recall. The findings supported the prediction. The same person remembered more when they read rather than when they watched the video. Effects of expressive emotion suppression on memory are discussed.

PERCEPTION VERSUS REALITY: BODY IMAGE DISTORTIONS AND SOCIAL COMPARISON

Amber Goulart

Faculty Adviser: Seth Surgan, Ph.D.

Social Comparison Theory (Festinger, 1954) states that people assess and their abilities and opinions based on comparisons with others and that these comparisons are a source of pressure toward uniformity. This study investigates the relationship between the tendency to engage in social comparison (and to believe in such comparison as a legitimate source of information about oneself) and the degree to which female college students display distortions of body image and body dissatisfaction. We hypothesized positive correlations between

social comparison engagement and levels of both body distortion and dissatisfaction. After controlling for age and BMI, preliminary results support our hypotheses. These patterns were consistent regardless of whether dissatisfaction and distortion were assessed for the total body or for specific body parts. These results suggest that internalization of social comparisons might be a driving force behind body distortion and dissatisfaction. A variety of potential social comparison mechanisms are discussed.

THE IMPACT OF VIEWING DATING THEMED REALITY TELEVISION ON RELATIONSHIP SATISFACTION AND SELF-ESTEEM

Holly L. Ketterer, Ph.D. , Julia Squiers

Faculty Adviser: Holly L. Ketterer, Ph.D.

This study examined the effect of viewing dating-themed reality television programming on participant relationship satisfaction and self-esteem. We also aimed to determine whether greater endorsements of reality TV realism, jealousy/envy, or romantic ideals were associated with greater reductions in relationship satisfaction and self-esteem after program exposure. Female college students currently in relationships completed a pre-test measuring self-esteem, relationship satisfaction, jealousy/envy, and romantic ideals, and thereafter, were randomly assigned to one of three experimental viewing conditions: (a) reality TV dating, (b) romantic motion picture, and (c) control. At post-test, self-esteem, relationship satisfaction, and television realism judgments were measured. Reduced relationship satisfaction and self-esteem were expected in the reality TV dating condition. This reduction was anticipated to be greater for jealous/envious individuals, and those who hold high romantic ideals or endorse greater realism judgments for reality television. Relevant results are presented.

GREAT EXPECTATIONS: PERFECTIONISM AND LOCUS OF CONTROL PREDICT COLLEGE ADJUSTMENT

Samuel Lapoint

Faculty Adviser: Champika K. Soysa, Ph.D.

We examined predictors of college adjustment in a sample of 182 primarily first-generation undergraduates. Internal locus of control positively, and external locus of control (e.g., powerful others and chance) inversely, predicted college adjustment. Maladaptive perfectionism (e.g., dissatisfaction) negatively predicted college adjustment, while adaptive perfectionism (e.g., high standards) positively predicted some facets of college adjustment. Our results contribute to the literature by establishing locus of control and new dimensions of perfectionism as predictors of college adjustment. Poster presented at the Eastern Psychological Association annual conference in New York, NY, March 2013.

DO WE HAVE FUN WHEN TIME FLIES?

Matthew Pageau

Faculty Adviser: Seth Surgan, Ph.D.

Much research supports the idea that “Time flies when you’re having fun.” People who become absorbed in a task lose track of time more easily and report greater task enjoyment. Little research, however, has investigated whether the reverse is true (i.e., Do we have fun when time flies?). In this study, it is hypothesized that distortions in time perception affect mood and enjoyment of a task. To test this prediction, participants were asked to perform one of two tasks varying in task complexity (low or high) in one of three time distortion conditions (stretched, compressed, or normal) and reported levels of task enjoyment, absorption, the degree to which they experienced time passing quickly or slowly, and whether the task as a whole took more or less time than expected. Preliminary results indicate that distortions in time perception, rather than absorption, predict positive changes in mood.

WHO'S TO BLAME? EXAMINING THE EFFECTS OF COGNITIVE REAPPRAISAL ON DECISION-MAKING ABOUT BLAME **(CH)**

Daniel Rowland

Faculty Adviser: Vrinda Kalia, Ph.D.

Cognitive reappraisal is a form of emotion regulation that allows us to rethink actions or events in a way that evokes different or lesser amounts of emotion (Richards & Gross, 2000). It's considered to be an effective method to deal with stressful events. Recent evidence suggests that it may also allow us to make more appropriate decisions by enhancing our field of attention (Heilman et al., 2010). This study examined the role of cognitive reappraisal in decision-making processes associated with blame. Two groups of participants (Cognitive Reappraisal vs. Control) were shown a slideshow containing details about a car accident and responded to a questionnaire assessing their thinking about the event. We hypothesized that the cognitive reappraisal group would be fairer in their decisions about blame in comparison to the control group. The results showed that the participants primed to engage in cognitive reappraisal were fairer in their decision-making about blame.

BENEFITS OF TEACHING MINDFULNESS TO STUDENTS IN THE HELPING PROFESSIONS

Champika K. Soysa, Ph.D., Keith Lahikainen, Ashley Kabasinsky, Elizabeth Contreras, Samuel Lapoint, & Colleen McKenna

Mindfulness and well-being were examined in 89 undergraduates. Student learning on a test of their ability to differentiate between the five facets of mindfulness (describing, awareness, non-judging, non-reactivity, and observation) increased after a teaching module, as predicted. Also as predicted, the students' willingness to use mindfulness themselves, with others, and with future clients, increased after the teaching module. Furthermore, the describing, observing, and non-judging facets of mindfulness predicted well-being before the teaching module; and describing, observing, and non-reacting predicted well-being after the teaching module. This demonstrates the potential benefits of teaching students in the helping professions about mindfulness. Poster presented at the New England Psychological Association conference, Worcester, MA, October 2012.

DECONSTRUCTING PERSONALITY THEORY BY ANALYZING OBSTACLES TO EDUCATION AT A REGIONAL STATE UNIVERSITY

Champika K. Soysa, Ph.D.

A survey on obstacles to education was situated within a course on Theories of Personality. Students learned about the socio-political context of theory development. Regarding Karen Horney's personality theory, students learned about her early history and middle class upbringing that gave her opportunities to travel abroad, allowing her the possibility of reflecting on her own culture by observing those of others. Students examined her challenges as well, including family conflict regarding access to higher education and her later struggle to retain her position as a student. Students completed the survey regarding their own obstacles to education, an active learning exercise, which acknowledges the barriers they experience and draws them into engaging with course content. Paper presented as Chair of a symposium titled "A Pedagogical Tool-Kit to Engage Working Class Students in Higher Education" at the American Psychological Association conference in Orlando, FL, August, 2012.

PREDICTION VS. REDUCTION OF STRESS, TECHNOLOGY USAGE AND MINDFULNESS VS. SOUND EXPOSURE

Champika K. Soysa, Ph.D., Carolyn J. Wilcomb, Jennifer M. Gardner, Erin Borglund, and Victoria Reiszner

Mindfulness (non-judging, awareness, and non-reactivity) inversely predicted stress. In a second study regarding technology usage, social networking and mp3-player listening positively predicted stress, among undergraduates. Finally, a brief sound-exposure reduced stress. Our findings could inform counseling centers on campuses about programming for stress-reduction. Poster presented at the American Psychological Association conference, Orlando, FL, August 2012.

MINDFULNESS, SELF-COMPASSION, AND SELF-EFFICACY ARE GENDERED PREDICTORS OF WELL-BEING

Carolyn J. Wilcomb, Erin Borglund, Samuel Lapoint, and Colleen McKenna

Faculty Adviser: Champika K. Soysa, Ph.D.

Predictors of well-being were investigated in 148 undergraduates. Mindfulness (describing) and positive self-compassion positively (self-kindness), and negative self-compassion inversely (self-judging) predicted well-being in women. Mindfulness (non-judging) and self-efficacy (general and social) predicted well-being in men. The differential prediction of well-being in men and women may inform interventions to enhance well-being among primarily first generation undergraduate students. Poster presented at the New England Psychological Association conference, Worcester, MA, October 2012.

SOCIOLOGY

COLLABORATIVE TEACHING AND INTEGRATIVE LEARNING – COMPUTER ETHICS AND SOCIOLOGY

Sonya Conner, Ph.D., Aparna Mahadev, Ph.D.

In this integrative teaching and learning effort, students from Introduction to Sociology (SO 100) and Technology, Public Policy and Urban Society (UR 230) were brought together to learn from each other and to share ideas. (As a social science, sociologists typically stay away from ethical issues. Likewise, computer scientists are not typically exposed to sociological theory.) Through this project, faculty and student learning were enhanced by applying diverse perspectives of understanding to the impact of social media on society. Faculty worked together to develop the project, and students from each course had the opportunity to learn together—through participation in film viewing event and a follow-up virtual discussion/analysis of the role of social media on society. Students had the opportunity to make connections not only between these two courses, but also between how what is being learned in the classroom fits into a broader scope of learning.

EFFECTS OF RACE, CLASS, AND GENDER ON THE DELIVERY OF EDUCATIONAL SERVICES TO AT-RISK YOUTH

Kevin Cortes

Faculty Adviser: Sonya Conner, Ph.D.

This research utilized a grounded theory approach and a non-participant observation methods to examine the delivery of educational programs to at-risk youth, who receive services through a local organization. Youths residing at this facility participate in structured daily schedule including counseling sessions, drug education, life skills training and academic instruction. The findings of this study suggest that race, class, and gender of participants and facilitators impact the ability to deliver services effectively.

PROBLEMS WITH PRIVILEGING MARRIAGE IN PUBLIC POLICY**

Brittany Davis

Faculty Adviser: Fortunata Songora Makene, Ph.D.

This paper examines a brief history of marriage, the status of marriage in America, and examines arguments towards traditional marriage. Specifically, that marriage serves a public purpose thus, government can legitimately privilege marriage. Conservative groups claims that other relationships such as cohabitation and homosexuality do not benefit children and society, and, therefore, should not be supported by government. I evaluate the claims that marriage between one man and woman is truly beneficial, including investigating the impact of keeping certain types of relationships (such as polygamy, same sex couples, and childless marriages) taboo. The Family Research Council and other groups believe heterosexual marriage is a cure-all for society's problems. However, an alternative assessment of correlations between marriage and healthier societies, involved citizens and decreased violence suggests that less stratification between social classes could provide similar benefits to society.

A SOCIOLOGICAL APPROACH TO DEVELOPING A HIGH SCHOOL AFTER-SCHOOL PROGRAM
Katryna Goodreau
Faculty Adviser: Sonya Conner, Ph.D.
Stemming from a need expressed by a teacher at a local high school, this project utilized sociological theory and research to guide the development of a potential after-school program for a high school in Worcester, Massachusetts. The program would be designed to help reduce the likelihood of dropping out of high school and increase the likelihood of entering college. The focus of this project was to engage in a needs assessment process and develop a survey that could be used to evaluate the effectiveness of the program.

URBAN STUDIES

NOT MAKING THE SAME MISTAKE TWICE: BOSTON'S PLAN TO REINVENT 426 WASHINGTON STREET…FOR GOOD **(CH)**
Lindsey Bullen
Faculty Adviser: Lisa Boehm, Ph.D., Thomas Conroy, Ph.D.
"Not Making the Same Mistake Twice: Boston's Plan to Reinvent 426 Washington Street…For Good" explores the evolution of the infrastructure that has been located at that address in Boston's Downtown Crossing area throughout time. Within two decades, 426 Washington Street went from being the site of Boston's second most popular tourist attraction, Filene's Basement, to being occupied only by dilapidated, decaying buildings. After a failed attempt at redevelopment because of the recent recession, a gaping hole now exists on the lot, which onlookers have deemed "Boston's Biggest Eye Sore." However, in September of 2012, the 60-story mixed-use Millennium Tower received the seal of approval to be built at the site. This research project examines the transformation of 426 Washington Street, with a focus on the impact and legacy of Filene's, failed development plans for the site, and the ways Millennium Tower is anticipated to revitalize struggling Downtown Crossing.

CHINA'S DEMAND FOR US EDUCATION*
Lu (Diana) Chen
Faculty Adviser: Shiko Gathuo, Ph.D.
Due to globalization, the consumption of education has gone beyond national boundaries. U.S. higher education remains dominant in reputation, taking 45 of the places in the top 100 and 7 in the top 10. China has experienced a 12,700 percentage growth from 1,000 enrollments in 1980 to 128,000 enrollments in 2010, becoming the top Asian contributor to US foreign student population
The purpose of this study was to find out the factors leading to China's growth in its demand for U.S. education and the increased enrollment of Chinese students in U.S. universities and colleges. Data were obtained from international students from China and the persons in charge of international program offices of universities and colleges in Worcester, Massachusetts, through interviews and focus group discussions.

CAREER EXPECTATIONS AND PRESIDENTIAL ELECTION OUTCOMES: CASE OF WSU STUDENTS
Shiko Gathuo, Ph.D., Tom Conroy, Ph.D.
Increasingly, students, parents and even politicians are questioning the value of a college education. This study, which utilized a quantitative survey, sought to find out whether WSU undergraduate students proactively research and consider their majors (and career options), and whether they make the connection between presidential election outcomes and their success in life.
Some of the findings were as follows:
1) While the majority of students indicated that they thought that the time spent in college was worthwhile, they did not think that college was worth the financial cost. 2) Bread and butter issues dominated the issues that students were interested in as far as presidential elections were concerned. 3) Surprisingly, only a minority

"strongly agreed" that the presidential election outcome would affect their ability to pay back their school loans, buy a house or support a family.

THE WSU GLOBAL GENERATION CONNECTION

Kelsey Hopkins, Samuel Demma, Logan Woodcome, and ELL Tutors

Faculty Adviser: Maureen Power, Ph.D.

This English Language Learner (ELL) program, sponsored by the Intergenerational Urban Institute and the department of Urban Studies, facilitates relationships among WSU students of all ages and elder English language learners from the community. This for-credit practicum is an experiential learning course which provides younger and older students with the opportunity to teach conversational English, assist elders preparing for citizenship, and form community based relationships. In the process, an intercultural exchange happens as tutors and elders share their customs and stories. Recently, the program has expanded beyond the WSU classroom to two off-site locations in the Worcester community, an elder Worcester Housing Authority site at 425 Pleasant St. and the NU Café on Chandler St. WSU students tutor Albanian, Russian, Chinese, Sudanese, and Hispanic English language learners, filling a need in the community and receiving a unique and personal global perspective.

HOT TEAM FIGHTING HUNGER ON CAMPUS AND IN THE COMMUNITY WITH SNAP (SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM)

Amanda Johnson, Thea Ashkenase, Gladys Wood, Princela Boahene, Tiana Mangual, Carolyn Graham, Mary Ellen Macuen, Kathleen Collins, Milagros Rodriguez, Kathryn Fant, Judith Knight

Faculty Adviser: Maureen Power, Ph.D.

Hunger is a serious problem in the Worcester community. Twenty-five percent of the Worcester population has income below the poverty line, creating food insecurity. The Hunger Outreach Team ("HOT") is an intergenerational hunger advocacy team of students ages 20 to 89. HOT helps students on campus (Urban Studies office) and elders in the community through application assistance for SNAP (formerly known as Food Stamps). Elders are assisted at residential sites and senior centers. Our SNAP Bingo game engages and educates elders. "HOT" members research national and regional hunger needs, as well as legislative and reform efforts. They communicate with the Massachusetts Law Reform Institute, the Worcester Food Policy Council, DTA, and other service providers. SNAP stimulates the local economy by generating $9.35 for every $5.00 received. Each month over $103 million comes into our state through SNAP. Our Empty Bowl event on campus raises funds for local food assistance.

THE HISTORY BEHIND THE MEMORIAL SQUARES OF WORCESTER, MASSACHUSETTS

Lesa McWalters

Faculty Adviser: Madeline Campbell, Ph.D., Timothy Murphy, Ph.D.

Scattered throughout the city of Worcester, Massachusetts, more than two-hundred stone markers, metal plaques, flags, and wreaths decorate street corners to memorialize soldiers of past wars. These markers are called memorial squares, named after soldiers who lived in the neighborhood in which they stand. Many of the soldiers from Worcester who died in the First World War are buried in foreign soil. The only marker that commemorates their death on American soil is the memorial squares of Worcester. This project focuses on the historical meaning and cultural aspects behind three memorial squares honoring men who died in World War I: Kelley Square, Brosnihan Square, and Frostholm Square. In addition, this project explores the communal memory of our past through urban spaces using military archives, memoirs, interviews, Veteran documents, and photographs. Lastly, the project provides insight into the logistics of obtaining and maintaining a memorial square in the City of Worcester.

CRIME IN COLLEGE CITIES

Rebecca Mullen

Faculty Adviser: Lisa Boehm, Ph.D., Thomas Conroy, Ph.D.

Across the country there are cities that rely on colleges to drive people to the area. Boston for example, with more than thirty institutions, many of the work opportunities in the city lie within colleges and universities. The economy of Boston is succeeding today in large part from student contribution. Research will be conducted to compare city crime between places with and without a high number of college students. Some cities are flooded with college students, but still maintain a low crime rate. Other cities with fewer colleges can be used to compare and determine if the colleges affect Boston's crime rate. The comparison will also demonstration if the high crime would be in the city of Boston with a change in population. There are some crimes that are indicative to college-aged individuals that will also play a large role on the crime in the area.

AFTER-SCHOOL PROGRAMS FOR INNER-CITY YOUTHS IN NEW YORK CITY

Brittany Muscente

Faculty Adviser: Timothy Murphy, Ph.D., Madeline Campbell, Ph.D.

After-school programs in New York City offer inner-city youths a much needed outlet, thus providing a safe and enriching learning environment. An inner-city youth can be defined as a child or adolescent that comes from an extremely populated section of a city, usually surrounded by others living in poverty; these individuals are usually of a minority descent, but not always. This paper will explore after-school programs for inner-city youths in New York City as a whole, focusing specifically on the different kinds of programs, funding, and what the programs are providing for the youth and their families. Research has shown that those youths who attend an after-school program do better in school and aspire to a secondary education. Young people who attend an after-school program are not only working on their education but social skills and healthy living as well. This paper will provide a better understanding of after-school programs in New York City, and explain why they are an essential part to inner-city youths growth and development

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A "GARDEN FOR ALL AGES"

Pamella Saffer, Andrew Cavan, Rebecca Wilson, Miriam Nyan, Andrea Buffone, Erica Stead, Rosel Patton, Tia Spetaccino, Dimitri Kambouris, Katelyn Rozenas

Faculty Adviser: Maureen Power, Ph.D.

The Intergenerational Urban Institute has spearheaded the transformation of a neighboring vacant lot into a thriving natural resource for the community. Working with the students and teachers of neighboring Chandler Magnet Middle School and the elder residents of Bet Shalom, the team strives for a natural, green space within our urban area. By utilizing "square foot gardening", a method that increases yield while helping students develop math skills, the garden team hopes to maximize the harvest from a finite amount of space and facilitate learning and growth among the generations. People of all ages learn the importance of urban agriculture, community building, outdoor learning, growth and regeneration cycles, proper diet, exercise, nutrition, and more. The garden is growing more than vegetables; it is growing relationships, connections to the soil, a sense of wonder, knowledge of nutrition and healthy eating, as well as providing lots of fun in the outdoors.

AFRICA: WHAT COMES TO MIND?*

Anne Shila Waritu

Faculty Adviser: Shiko Gathuo, Ph.D.

Both the mainstream and New media propagate and perpetuate stereotypical views on Africa. News from African countries or locales is almost exclusively negative, is generalized to the whole continent and is usually in the form of sensationalized anecdotal information as opposed to hard data. This poster presentation is based on a survey of graduate students with regard to their views on and knowledge of Africa. The survey revealed that

graduate students have internalized the news media's tilt on Africa - the vast majority of respondents had only negative things to say about what came to their minds when they thought about Africa. The poster also presents some little known facts about the African continent.

VISUAL AND PERFORMING ARTS

SENIOR THESIS EXHIBITION**

John Balco, Tessa Demers, Jessica Gain, Rachel Lubanko

Faculty Advisers: Catherine Wilcox-Titus, Ph.D., Amaryllis Siniossoglou, M.F.A., Stacey Parker, M.F.A.

Four Senior Thesis students have their work installed in the Gallery. John Balco's landscapes reflect a confluence of closely observed mountains, forests, and deserts. He wants viewers to slow down and discover the traces of the past that survive into the present. Tessa Demers works in 2D and 3D materials, using the language of realism and abstraction. She frequently uses the female form to register her impresssions of daily life. Jessica Gain's multimedia work uses diverse materials in creative combinations that celebrate life and identity. Her adventurous sculptures reflect a creative use of nontraditional materials. Rachel Lubanko's sculptures reflect her investigations into the cycles of nature, especially the ways in which animal populations have changed as a result of cataclysmic climate change and the pressures of human demands on the environment. Her work reflects the fact that the fate of humans and animals are deeply entwined. The Gallery will be open from 1-7 p.m., with an Opening Reception from 5-7 p.m.

VPA MAJORS PRESENT MUSIC, THEATRE, AND ART CAPSTONE PROJECTS**

Caitlyn McKenna (Music), Ann Eggleston (Music)

Faculty Adviser: Christie Nigro, Ph. D.

Amanda Hoegen, Joseph Nawn, Darrell Ginese(Theatre)

Faculty Advisers: Sam O'Connell, Ph.D., Adam Zahler, M.F.A.

Presentations and performances of these seniors' five capstone projects take place at the Fuller Theater at 7:30 p.m., offering audiences an evening of theatre, music, and art. This evening presents a culmination of the students' work in earning their B.A.s in Interdisciplinary Visual and Performing Arts. The students base their work in their chosen area of concentration and demonstrate their understanding of the interdisciplinary influences at play. Caitlyn McKenna combines her concentration in music and minor in business administration in a presentation that reviews the role that business processes play in performance. Ann Eggleston bases her piano recital on the artwork she created as part of her VPA major. Her artwork will also be on display during the performance. Both Amanda Hoegen and Joseph Nawn perform original plays that they wrote and directed. Darrell Ginese presents a reading of an excerpt from his original play.

WORLD LANGUAGES

NAFTA AND THE ZAPATISTAS**

Constanza Bartholomae

Faculty Adviser: Guillermina Elissondo, Ph.D.

This presentation focuses on the Zapatistas, an indigenous group from Chiapas, Mexico, that has been advocating for equal rights for almost two decades. Though the roots of the rebellion can be traced to the European invasion of the Americas when indigenous groups lost control of historic lands and were often forced into slavery, the Zapatista uprising in 1994 represented a new call for struggle and resistance. By the end of the twentieth century, indigenous communities in Chiapas lived in the most marginal and isolated condition; high levels of poverty and lack of health care and education plagued their communities. The NAFTA Treaty, signed by the United States, Canada and Mexico, furthered their marginalization, and the Zapatistas rebelled against the neoliberal model of the treaty. The presentation will also explain how social media were arguably the most important assets for the group and the internet their most effective weapon.

PLANNING COMMITTEE

The Celebration of Scholarship and Creativity
is presented by the Office of Academic Affairs.

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486 Chandler Street • Worcester, MA 01602
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Designed and Printed by the Worcester State University Office of Publications and Printing Services.