

2012

Graduate Showcase 2012: Education for the Future

The Graduate School, Grand Valley State University

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**Graduate Showcase 2012:
Education for the Future**

Presented by:

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Welcome to the Graduate Showcase 2012: Education for the Future

It is with great pleasure that we welcome you to Grand Valley State University's second annual Graduate Showcase. The theme "Education for the Future," reflects Grand Valley's commitment to the success of our students and our belief in graduate education as key to the ongoing well-being of our state and country.

This showcase offers graduate students a unique opportunity to present their research, scholarship, and professional experiences. Each of the graduate programs at GVSU nominated students to take part in this event, representing the breadth, variety and rigor of graduate study available here.

To those who may be considering enrollment in a graduate education program, we invite you to tour the poster presentations and ask questions about graduate study, scholarship, and research. Our current graduate students who are presenting will be able to provide you with a first-hand perspective on their experiences at GVSU.

We appreciate the time and energy devoted to this event by our participating students, as well as by their graduate faculty mentors and program directors. We also extend our thank you to the many people who contributed to the success of this event including: Robert Smart, John Stevenson, Tracey James-Heer, Nick Viau, Jennifer Palm, Irene Fountain, and Heather De Nio.

As GVSU continues to create a lasting legacy, we look forward to the future success of our institution and our graduate students. We hope you enjoy the Graduate Showcase. Thank you for participating in this event!

Sincerely,



Thomas J. Haas
President



Gayle R. Davis
Provost and Vice President
for Academic Affairs



Jeffrey A. Potteiger
Dean, Graduate Studies

DeVos Center – April 10, 2012

3:30 – Poster Presentations and Information Tables
(Exhibition Hall)

4:30 – Introduction from Dean Potteiger & Welcome from Provost Davis
(Loosemore Auditorium)

Keynote Speaker: Dr. James Shiveley, Miami University
“Creating Synergy between Teaching and Research”

5:00 – Outstanding Poster Awards presented by Dr. Robert Smart
(Loosemore Auditorium)

Biography: Dr. James Shiveley, Miami University, Oxford, Ohio

James Shiveley is the Condit Endowed Professor in the Department of Teacher Education at Miami University where he teaches courses in social studies methods, economics and American government. He earned both his undergraduate and master’s degrees from Miami University in social studies education before teaching high school social studies in Beavercreek and Wilmington, Ohio. He received his doctorate from The Ohio State University in the area of Global and Social Studies Education. He was the chair of the Department of Teacher Education for ten years. His teaching, research, and service activities are concentrated on citizenship education for a democratic society, the development of school/university partnerships, and teacher education in a global society.

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Biology

(College of Liberal Arts and Sciences)

HARD TO KILL: HYBRID WATERMILFOIL ARE LESS SENSITIVE TO A COMMONLY USED HERBICIDE. LaRue EA, Zuellig MP, Thum RA; Department of Biology-Annis Water Resources Institute, College of Liberal Arts and Sciences.

PURPOSE: The Eurasian watermilfoil and its hybrid with native northern watermilfoil are both widespread invaders that are extensively managed with herbicides. Recent reports by lake managers suggest this hybrid does not respond as well to commonly used herbicides, but very few studies have tested whether or not hybrids are less susceptible to herbicides. In the Menominee River Watershed, in the Western Upper Peninsula of Michigan, hybrids occur more often than parental species in herbicide (2,4-D) treated lakes than untreated lakes. This suggests hybrids may have a competitive advantage in environments where herbicides are commonly used. To test the hypothesis that hybrids are less 2,4-D susceptible than Eurasian watermilfoil, we conducted a herbicide sensitivity assay. **SUBJECTS:** We experimentally compared 2,4-D sensitivity of six hybrid and four Eurasian watermilfoil populations from the Menominee River Watershed, in addition to a second experiment where we compared 2,4-D sensitivity of six hybrid and nine Eurasian watermilfoil populations from the Lower Peninsula of Michigan. **METHODS AND MATERIALS:** 2,4-D sensitivity assays were conducted in mesocosms. **ANALYSES:** A two-way nested analysis of variance was used to compare hybrid and Eurasian watermilfoil 2,4-D sensitivity. **RESULTS:** Hybrids were less sensitive to 2, 4-D than Eurasian watermilfoil. **CONCLUSIONS:** If hybrids are less likely to respond to commonly used herbicides, new management strategies may be needed to increase the efficiency of chemical usage in freshwater ecosystems.

Biomedical Sciences

(College of Liberal Arts and Sciences)

EFFECTIVENESS OF THE LOSE BIG CHALLENGE, A CULTURALLY-BASED, INNER-CITY WEIGHT LOSS PROGRAM Hall, J. Anderson K; Statistics Department, Lown D; Department of Biomedical Sciences, College of Liberal Arts and Sciences.

PURPOSE: To assist the Inner City Community Advocates in obtaining grants by providing information regarding weight loss and maintenance in their 2011 BIG LOSE Challenge. **SUBJECTS:** Twenty-eight participants (26 women; 2 men) in a 12-week culturally-based weight loss program were studied. **METHODS AND MATERIALS:** Before and after the intervention,

weight, blood pressure, fasting glucose, eating behaviors, and quality of life scores were measured. **ANALYSIS:** t-tests were used to assess differences in BMI, quality of life scores, and eating behaviors between pre-intervention, 12-weeks, 4 months and 6 months post-intervention. **RESULTS:** Eighty-six percent of the participants were obese (BMI >30 kg/m²). Of the 17 participants who attended the pre- and post-screening, 47% had fasting glucose \geq 100 mg/dl and 70.5% had blood pressure \geq 120/80 mm Hg. At the 12-week post-screening, 29% had fasting glucose \geq 100 mg/dl, while blood pressure remained unchanged. Female participants lost an average of 3.0 kg, 3.4 kg and 4.4 kg at 12 weeks (n=15), 4 months (n=13) and 6 months (n=14), respectively. The men lost an average of 12.1 kg (n=2), 12.2 kg (n=1) and 15.0 kg (n=1). Quality of life scores improved and cognitive restraint scores increased while emotional eating, uncontrolled eating and inhibition scores decreased. Women exhibited a significant decrease in mean BMI and increase in mean cognitive restraint and quality of life scores from baseline to 6 months (p<0.05). **CONCLUSION:** These results suggest this motivational program may provide health benefits, improve quality of life and change eating habits up to 6 months. Attrition was high indicating the challenges of reaching the inner-city, minority community.

Biostatistics

(College of Liberal Arts and Sciences)

INTERNSHIP EXPERIENCE IN COMPUTATIONAL BIOLOGY AT VAN ANDEL INSTITUTE ; Malloure, MR, Furge, KA; Department of Statistics, College of Liberal Arts and Sciences.

PURPOSE: While satisfying the internship requirement for the GVSU Professional Science Masters in Biostatistics, this internship experience involved statistical support for biostatistics and bioinformatics projects for the Computational Biology Lab and collaborators of Dr. Kyle Furge at the Van Andel Institute. **CHALLENGE:** In a laboratory setting, the work involved learning new software and techniques in bioinformatics and gene expression analysis, while also learning and understanding unfamiliar concepts in biology. **EXPERIENCE and OUTCOMES:** Statistical genetics and associated statistical computing methodology are rapidly advancing areas in applied statistics. Extremely valuable experience in the analysis of gene expression micro-array data was obtained. Utilizing R software and specialized R packages, techniques such as survival analysis, pathway analysis and classification/clustering were applied. **IMPACT:** While completing the internship requirement of the Masters degree, obtaining valuable experience in an industry/research setting was a great opportunity.

Methodology involving micro-array gene expression analysis was learned and applied to real-life examples.

Biostatistics (College of Liberal Arts and Sciences)

INTERNSHIP EXPERIENCE AS SPECTRUM HEALTH RESEARCH STATISTICAL CONSULTANTS; Richardson, AL, Jahnke, JS; Department of Statistics, College of Liberal Arts and Sciences.

PURPOSE: Our internship provided statistical support for medical researchers and employees at Spectrum Health Research and satisfied the internship requirement for our Professional Science Masters program in Biostatistics. **CHALLENGE:** Our main challenges were jumping into the projects of past biostatistics interns, cleaning messy data, working with very small sample sizes and applying new unknown statistical techniques as the only on-site statisticians. **EXPERIENCE and OUTCOMES:** We were statistical consultants in a real world medical research setting and had the opportunity to apply known statistical techniques such as ANOVA, regression and survival analysis while also learning and applying new ones such as equivalence testing and the display of survey data on a national map. We communicated with researchers on diverse data involving such topics as pancreatic cancer surgery, sleep apnea and bedrest duration. **IMPACT:** While satisfying our master's degree internship requirement, our statistical support roles allowed us to gain valuable experience in statistical decision making, data analysis and professional consulting.

Business Administration (Seidman College of Business)

PLAYING TOGETHER IN THE GLOBAL SANDBOX: A CASE STUDY ON AMWAY'S ADVANCING SUPPLY CHAIN. Filiatreau, C; Seidman College of Business.

Global supply chains are shifting the way we do business and changing the world as we know it. As technology continues to shrink our world, it becomes clear that to stay competitive and prevail in a constantly changing environment, the supply chain must adapt. As companies journey through globalization, it is essential to keep in mind that besides adjusting the physical footprint of the supply chain, companies must also change their culture, processes, and policies to fit. As Amway moved from a multi-national company to a global enterprise, the need to break down functional silos and cultural barriers became clear. One such example of this

transformation is the relationship between Marketing and Supply Chain. Historically, these two groups operated in separate functional silos and seldom had much interaction. From my desk within the Supply Chain, I observed that Marketing saw Supply Chain as “just operations and shipping” and Supply Chain viewed marketing as “creative types who don’t understand operations.” This mindset created many challenges as instead of working together to build a castle, these two groups played in sand. To become a truly global and integrated Supply Chain, the organization must play in the same sandbox, with the same tools. Three examples of how this is manifesting are explored including: shared goals across the organization, partnership with the customer and development of a global product offering. As these two groups continue to share accountability and success, playing collaboratively in the same global sandbox, Amway’s Supply Chain continues to advance.

Business Administration (Seidman College of Business)

MANAGEMENT OF THE GOOGLE ADWORDS GRANT FOR ARBITRATIONS AND ELECTRONIC HUMAN RESOURCES (E-HR).

Cameron, C E; Seidman College of Business.

PURPOSE: In 2008, Professor Star Swift received a grant from Google, which awarded \$10,000 per month of in-kind (free) Google AdWords advertising for the GVSU Arbitrations and Electronic Human Resources (E-HR) websites (<http://www.gvsu.edu/arbitrations> and <http://www.gvsu.edu/e-hr>). AdWords are the text ads one sees at the top of Google search results.

PROCEDURES: My independent study responsibility consists of maintaining the grant by writing advertisements and managing keywords in order to increase website traffic. This includes researching arbitrations and E-HR, writing advertisements, managing keywords based on analytics, and updating the website designs and content. **OUTCOME:** Prior to my independent study, we used only \$200 of the \$10,000 per month allotment. By more actively managing the websites, we are now utilizing over \$9,000 per month in AdWords. This results in over 12,000 people worldwide accessing the websites each month, showcasing GVSU capabilities in arbitrations and E-HR. **IMPACT:** This experience has given me the opportunity to study arbitrations, E-HR, marketing, analytics, advertising and management, while simultaneously utilizing my design and information systems experience. I have also gained invaluable connections as Professor Swift and I were invited to Google Ann Arbor for an AdWords conference as one of the top non-profits managing the AdWords grant in the Midwest. As

we approach the \$10,000 per month goal, we will become eligible for a grant that awards \$40,000 per month of in-kind advertising.

Cell and Molecular Biology (College of Liberal Arts and Sciences)

EXPOSURE TO HYPERGRAVITY DURING PREGNANCY AND EARLY LACTATION ALTERS ABUNDANCE OF CYTOSKELETAL AND EXTRACELLULAR MATRIX PROTEINS IN A RAT MODEL. Gebre-Egziabher K¹, Resau J², Plaut K³, Patel O¹; Department of Cell and Molecular Biology, College of Liberal Arts and Sciences.

¹Department of Cell and Molecular Biology, Grand Valley State University, 1 Campus Dr, Allendale, MI 49401-9403, USA ² Program for Biospecimen Science, Van Andel Institute, 333 Bostwick Ave N.E, Grand Rapids, MI 49503, USA ³College of Agriculture, Purdue University, West Lafayette, IN 47907, USA

PURPOSE: Complete functional differentiation of the mammary gland is dependent on an integral cytoskeletal support structure and hormonal direction. Furthermore, *prolactin released from the brain is indispensable for initiation and maintenance of lactation in all the species so far studied. However, intact cytoskeletal architecture is pivotal for prolactin-mediated development.* Therefore, the objective of this study was to determine the effects of chronic hypergravity (HG) exposure from mid-pregnancy to early lactation on pre-partum/postpartum abundance of the cellular scaffolding and connective tissue proteins in the rat mammary gland. **SUBJECTS:** One group of pregnant Sprague Dawley rats were exposed to either 2g (HG) or 1g (control) from days 11 to 20 of gestation (G20). Another control (1g) and experimental (2g) groups were investigated from days 11 of pregnancy through days 1 (P1) and 3 (P3) postpartum. **MATERIALS AND METHODS:** On G20, P1 and P3, mammary tissue was collected and processed for immunohistochemical quantification of proteins associated with cellular scaffolding (actin, tubulin, cytokeratin, vimentin). **RESULTS:** At G20, and P3 significant ($p < 0.05$) amounts of actin, tubulin, and vimentin were detected in HG rats compared to control animals. Interestingly, the only observed change at P1 was an increase in vimentin in rats exposed to HG ($p < 0.001$). **CONCLUSION:** Our results suggest that abnormal cytoskeletal protein quantities correlate with the reduced mammary metabolic activity in HG-exposed rats.

THE INTERACTION OF MID1 AND F-ACTIN DURING CYTOKINESIS IN FISSION YEAST Testori M, Jakubowski JL, Hager C, Clifford Hart DM; Department of Cell and Molecular Biology, College of Liberal Arts and Sciences.

Mid1 is a protein in the fission yeast *Schizosaccharomyces pombe* that is important for proper cell division. Before cytokinesis, Mid1 anchors to the plasma membrane providing a scaffold for actin binding and bundling proteins leading to the central positioning of the actin-myosin contractile ring. The placement of the ring dictates the position of constriction and ultimate division of the cell into two genetically identical daughter cells. Deletion of the *mid1* gene causes misplacement of the contractile ring resulting in uneven segregation of the genetic material during cytokinesis. F-actin is the major component of the contractile ring and preliminary results indicate the C-terminus of purified Mid1 binds this cytoskeletal element. To further clarify the Mid1 actin-binding domain, five GST-fusion proteins spanning the Mid1 C-terminus were produced and purified. The fragments were individually analyzed for association with actin filaments by cosedimentation assay. Future experiments will focus on the roles of the Mid1 binding domain to F-actin in actin polymerization, localization, and stability during contractile ring formation. Clarification of the interaction of Mid1 with F-actin may reveal an important regulatory step for proper cytokinesis and can help explain the vast regulatory roles of Mid1 during contractile ring formation in fission yeast.

AN EXPLORATION OF COMMUNICATION STRATEGIES FOR EFFECTIVELY ORGANIZING AND MANAGING COLLABORATIVE GRANT WRITING GROUPS. Dopke, L; School of Communications, College of Liberal Arts and Sciences.

PURPOSE: This research explored approaches to organizing and managing collaborative grant writing efforts, as there are few documented accounts regarding the range of variation in the processes currently deployed by professionals working within this context. **SUBJECTS:** Participants were comprised of professionals who had at least three years of grant experience and who had participated as a member of a collaborative grant writing group. **METHODS AND MATERIALS:** A qualitative interview script was designed using an objectivist approach. Interview questions were arranged

into six categories: pre-collaboration, orientation, conflict, emergence, reinforcement and reflection. Interviews were recorded, as were semi-transcribed, detailed field notes. Data collection concluded once a point of saturation had been reached in each of the pre-determined categories of inquiry. **ANALYSES:** A review and analysis of participant responses were used to formulate general conclusions about the subject. This process allowed the researcher to build a logical interrelationship among themes, and present these in summation along with best practice strategies. **RESULTS:** Findings were used to build a typology of the roles specific to collaborative grant writing groups, provide a discussion of ideal group composition and leadership, and to identify and suggest ten best practice strategies for organizing and managing grant writing teams during the phases of the collaborative writing process. **CONCLUSIONS:** The suggested strategies are presented within the framework of Fisher's (1970) theory of small group decision making in an effort to suggest how they might be deployed at strategic points throughout the process to help such groups work more efficaciously.

Communication

(College of Liberal Arts and Sciences)

RELATING DRAMA AS REAL LIFE: A MODIFIED ACCOUNT OF KENNETH BURKE'S PENTAD Keeler, MK; School of Communications, College of Liberal Arts and Sciences.

PURPOSE: In the realm of Performance Theater, actors are faced with numerous pressures to consistently perform well. How an authentic performance is manufactured and ultimately delivered depends on the responsibility and commitment an actor invests in the character development process. The purpose of this study was to explore the progression of actor and character relationships by evaluating the concept of *motive*: The reasons why people do the things they do. **METHODS:** Kenneth Burke's dramatism theory, describing 'all life as drama' as it relates to the five components of the dramatism pentad: Act, Scene Agent, Agency and Purpose, were employed as a way to consider the motives behind human behavior, action and discourse. As a result of Burke's influence, an alternative explanation artistically titled the performance pentad is presented. This concept offers a modified account of the original pentad to illustrate 'drama as real life.' **ANALYSIS:** The performance pentad suggests a framework explaining how actors create character relationships as a way to orchestrate drama where persuasion is a key factor in the motivation of performance. It delivers five essential points: Influence, Interpretation, Development, Persuasion and Satisfaction. **RESULTS:** It is suggested that the performance pentad be applied to any

genre of theater. This study applies the performance pentad to George Bernard Shaw's play, *Pygmalion*, to demonstrate how it can be used to an actor's advantage when developing a relationship with a character role. Specific character analyses in *Pygmalion* were analyzed revealing the pentad's usability and relevance to the subject matter. **CONCLUSION:** Every action has motivation with intention. Actors create characters based on human emotion and personal experience developed over time. Actors use these tactics consciously and subconsciously in the development of a relationship with the characters they create on stage.

Computer Information Systems (Padnos College of Engineering and Computing)

PROXIMITY SYNCHRONIZATION FOR MOBILE WIRELESS SENSOR NETWORKS. Lingg, M.; School of Computing and Information Systems, Padnos College of Engineering and Computing.

PURPOSE: Wireless sensor networks are designed to be used anywhere that monitoring of widely-dispersed geographic areas is required. In order to achieve the conflicting goals of high precision at low cost, software algorithms can be used to ensure the correctness of important metrics such as accurate timing measurements. The area of focus in this investigation is increasing the accuracy between the clocks of different sensor nodes, for the purpose of improving the accuracy of time-sensitive data acquisition.

PROCEDURES: An initial study of published papers revealed several weaknesses and deficiencies of existing synchronization protocols, particularly with respect to mobile sensor networks. To address these issues, we have created a new clock synchronization protocol and developed a distributed, multi-threaded simulation environment to compare the performance of the new protocol against the old protocol. **OUTCOME:** Through extensive testing, the new protocol has been found to eliminate potential bottleneck constraints. When compared to the original protocol, these improvements provide for lower clock synchronization error across the network and substantially reduced power consumption. In addition, the improved protocol is more robust, in that it has the ability to dynamically reconnect and resynchronize as mobile nodes move in and out of range. **IMPACT:** This project has found that clock synchronization for wireless sensor networks can be improved by taking proximity into account. This improvement not only improves clock synchronization accuracy but also lowers power consumption and CPU use in wireless nodes.

Computer Information Systems (Padnos College of Engineering and Computing)

ACCESSORIZED THERAPEUTIC GAME EXPERIENCES FOR TOUCH-ENABLED DEVICES. Restrepo, A. School of Computing Information Systems, Padnos College of Engineering and Computing.

In the world of physical therapy, a number of consumer gaming devices have been used with various levels of success. Most commercially available video games are designed for the general population and are, in most cases, overwhelming and difficult for traumatic brain injury (TBI) or stroke patients to use. Specialized therapeutic medical devices are not only expensive and non-portable, they also make limited use of gamification techniques to better engage and motivate the patient. This thesis aims to study the use of inexpensive, portable handheld devices, together with a custom sensor accessory in order to drive a set of therapist designed and configured, short video games. The games are intended to elicit specific therapeutic movements from the patient, and also to produce clinical output for the therapists to use.

Criminal Justice (College of Community and Public Service)

EXPLORING MALE AND FEMALE INMATE MISCONDUCT. Gray, J.E., Hilinski-Rosick, CM; School of Criminal Justice, College of Community and Public Service.

PURPOSE: There has been a great deal of research conducted that has examined inmate behavior. Two of the most prominent theories offered to explain this behavior are importation and deprivation theory. This research attempts to determine if importation and deprivation variables are related to inmate misconduct and whether there are differences across male and female institutional behavior, particularly misconduct. **METHODS AND MATERIALS:** Data analyzed were collected by the North Carolina Department of Corrections and include information on every inmate incarcerated in a North Carolina Department of Corrections facility during summer 2010. **ANALYSES:** Multiple regressions techniques, namely, Ordinary Least Squares (OLS) regression was used to analyze the data. **RESULTS:** Results indicated that both the deprivation and importation models of inmate behavior explained why inmates in North Carolina committed behavioral infractions. Further, results indicated that there were differences across gender when it came to predicting infractions. **CONCLUSIONS:** Findings showed support for both the importation and

deprivation models, similar to previous research, and support for the hypothesis that men and women react differently to the prison setting. These findings underscore the need for more gender-specific research and programming for males and females

Criminal Justice

(College of Community and Public Service)

THE NEED (STILL) FOR WHITE COLLAR CRIME COURSES IN CRIMINAL JUSTICE CURRICULUM? Greenlees, K., Ross, D; School of Criminal Justice, College of Community and Public Service.

PURPOSE: White-collar crime causes more economic harm than all types of street and property crime combined. The scandals of Enron, Martha Stewart, Worldcom and Bernie Madoff have received some media attention, but many continue to be ignored. If white-collar crimes do exist and cost taxpayers billions of dollars then it would make sense that these crimes are taught to future criminal justice practitioners in the various criminal justice departments in the United States. This research attempted to understand how many white-collar crime courses are taught in public universities around the country, and why there are not more programs out there. **METHODS AND MATERIALS:** The data analyzed was collected from various public universities across the country. Using content analysis, the college and university catalogs were examined to find white-collar crime courses listed in their curriculum. Those that had a white-collar crime course were then contacted via email and asked several questions: 1) How often is this class offered during an academic year?; 2) What is the average class size?; 3) How many sections are normally offered?; 4) Who is the faculty member that teaches this course and how would I get in touch with them?; and 5) Would you be able to provide a copy of the course syllabus so we may see what topics are being taught/focused on? **ANALYSES:** Content analysis and descriptive statistics were used to analyze the catalogs. **RESULTS:** It was found that less than 10% of the criminal justice departments across the United States have a dedicated course on white-collar crime. This number is disproportionate to the amount of white-collar crime that occurs. **CONCLUSIONS:** White-collar crime is large area of crime that costs the public more than any other street or property crime combined, yet there is an insufficient number of courses available nationwide to teach future criminal justice professionals about this area. More research is needed to understand why white-collar crime is given such a low priority in criminal justice curriculum in public universities today, and a comprehensive guide to running a successful white-collar crimes course should be introduced.

Education

(College of Education)

A PRELIMINARY STUDY OF THE GAINS MADE IN READING AFTER TWELVE WEEKS OF INSTRUCTION WITH THE FUSION READING PROGRAM. Breen, HD; Master of Education in Special Education, College of Education.

Background: There are many students throughout the United States who require some form of reading remediation and intervention. While a variety of reading intervention programs exist for struggling readers in the elementary grades, this is not the case for struggling secondary readers. Many students are unable to keep up with the demands of the secondary curriculum because they do not have the reading skills and strategies that are required in order to be successful. More and more students are leaving high school with insufficient reading skills, and are unprepared for post-secondary education. Some of the intervention programs that are currently being utilized with struggling secondary readers were examined in this study. The purpose of this study was to begin to determine the efficacy of the Fusion Reading Program for struggling seventh-grade readers. **Results:** The results of this preliminary study indicated that students made gains in the areas of reading comprehension and fluency after twelve weeks of instruction with the Fusion Reading Program. Students also made gains in the area of decoding; however, these results were not as significant as those made in the areas of reading comprehension and fluency. **Conclusion:** Though the participants in this study only had twelve weeks of instruction with the Fusion Reading Program, the gains that students made in reading indicate that the Fusion Reading Program is an effective reading intervention program for struggling secondary readers and should be examined by schools looking to provide support for these students.

Education

(College of Education)

SCHOOL COUNSELING INTERNSHIP/PRACTICUM EXPERIENCE. Lambitz R; School Counseling, College of Education.

INTRODUCTION: Two 3-credit hour internships (300 clock hours each) are required in the school counseling master's degree program. During internships students complete specific tasks or projects related to their professional goals. Students are supervised by field supervisors who must be licensed or endorsed school counselors and provide one hour of weekly supervision on-site. **CHALLENGE:** The central challenge of this experience has been to develop my counseling skills in the areas of personal/social,

career, and academic development through individual student planning, comprehensive guidance curriculum, responsive services, and systems support. **EXPERIENCE:** I am completing my internship at Thornapple Kellogg High School (TKHS). The lead counselor, Nancy Iveson, serves as my on-site supervisor and director of the school counseling department at TKHS. **OUTCOME:** Each student submits a final portfolio documenting activities completed over the course of the internship and the GVSU School Counseling program. My portfolio includes artifacts which demonstrate that I understand the philosophy, principles, and practice of school counseling, including the administration and coordination of professional relationships within school systems as well as professional knowledge related to ethical and legal issues. The portfolio also contains work samples that provide evidence of my development of professional skills in the field of school counseling. **IMPACT:** These internship experiences are designed to meet Michigan Department of Education requirements for school counseling licensure or endorsement. Internships also provide graduate students in the school counseling program with field-based learning opportunities designed to provide work experience in an area of school counseling.

Education

(College of Education)

INVESTIGATING THE WORLD OF MATHEMATICS TO UNCOVER HOW LANGUAGE PROFICIENCY INFLUENCES ENGLISH LANGUAGE LEARNERS PERFORMANCE ON HIGH STAKES TESTS. Schuitema, D; Literacy Studies, College of Education.

PURPOSE: English Language Learners (ELLs) continue to be among the lowest-scoring groups on standardized tests and the gap between ELLs and their proficient English-speaking peers persists. The purpose of this study was to investigate the extent to which language proficiency influences performance on high stakes mathematics tests. **SUBJECTS:** The study included item performance data, by group, for seventh- and eighth-grade students ($n = 24,693$) who took the 2007 and/or the 2008 Michigan Education Assessment Program (MEAP), and a questionnaire completed by seventh- and eighth-grade participants ($n=16$) for triangulation. **METHODS AND MATERIALS:** Released items from the 2007 and 2008 mathematics MEAP were coded for data analysis and a questionnaire developed by the researcher was given to participants by teachers. **ANALYSES:** The item performance data set was analyzed using a logistic regression model to determine the interaction effects between ELLs and non-ELLs based on item type, language and strand. Cross tabulation, content, descriptive, and frequency analyses were conducted on questionnaire responses. **RESULTS:** Findings

from the logistic regression reveal that the odds ratio in passing an item is affected by both whether that item was a computation or word problem, and also if a non-linguistic feature was present ($p < .0001$). The difference in passing rate was not affected by strand. Most of the 19 words identified as confusing or unfamiliar on the questionnaires were context-specific or technical mathematics language features. **CONCLUSIONS:** Results from this study have important implications for teacher preparation, classroom instruction, test design and score interpretation.

Engineering

(Padnos College of Engineering and Computing)

EFFECT OF USING HAND WEIGHTS ON PERFORMANCE IN THE STANDING LONG JUMP. Filush, A, Ashby, B; School of Science in Engineering, Padnos College of Engineering and Computing.

PURPOSE: Previous standing long jump studies have shown that jumping with hand weights can significantly increase jumping performance. The purpose of this study was to investigate the mechanisms that enable performance improvement in the standing long jump when using hand weights and test the hypothesis the releasing the hand weights during flight can further increase jump distance. **SUBJECTS:** Four college-aged male subjects were chosen based on participation in athletic activities and physical ability. **METHODS AND MATERIALS:** Each subject executed 24 jumps (six trials for each of four different standing long jump techniques: without weights, with weights, releasing the weights backwards near the high point of the jump, and releasing the weights just prior to landing). Joint positions were recorded using multiple high-speed cameras and reflective position markers on the body. **ANALYSES:** The net joint moments were calculated using a 2D inverse dynamics analysis. An energy analysis of the system between jump initiation and takeoff was also performed. Data was compared between jump types using two-way ANOVA and ANCOVA linear statistical models. **RESULTS:** A significant increase in jump distance was found for both jump types involving weight release as compared to jump types without weights or with retaining weights for the entire jump. One mechanism that enabled this performance improvement in jumps with hand held weights was the increased amount of work performed by the lower body muscles during the take-off phase. **CONCLUSIONS:** Performance in the standing long jump can be enhanced by jumping with hand weights and releasing them during flight.

REFINEMENT OF THE CAST MICROSTRUCTURE OF HYPEREUTECTIC ALUMINUM-SILICON ALLOYS WITH AN APPLIED ELECTRIC POTENTIAL. Plotkowski, A. Anyalebechi PN; School of Engineering, Padnos College of Engineering and Computing.

BACKGROUND AND PURPOSE: Hypereutectic aluminum-silicon (Al-Si) alloys are widely used in the aerospace and automobile industries because of their low density, excellent wear and corrosion resistance, low coefficient of thermal expansion, good strength, and excellent castability. They are used in applications that typically require a combination of light weight and high wear resistance, such as liner-less engine blocks, pistons, and pumps. However, the performance of these alloys depends on the fineness of their cast microstructure, especially dendrite cell size, primary and eutectic Si particles. **METHODS AND MATERIALS:** In this study, the effects of applied electric current on the cast microstructure of Al-13 wt.%Si and Al-20 wt.%Si were investigated. This involved application of an electric current density of about 500 mA/cm² of melt surface area during solidification of laboratory-size ingots in a metal mold. The electric current was applied with a constant voltage power supply. **RESULTS:** Microscopic examination of the cast ingots with a metallurgical microscope revealed that the applied electric refined the cast microstructure of the hypereutectic Al-Si alloys. Specifically, it appeared that the electric current slightly modified the eutectic silicon particles and changed the size distribution of the primary silicon particles by increasing the population of comparatively smaller size particles. **CONCLUSIONS:** The extent of the observed cast microstructure refinement was less than the reported effects of applied electric current in technical literature. It was also significantly less than the effects of traditional refinement obtained by addition of strontium and phosphorus to the molten hypereutectic Al-Si alloys prior to casting.

MOVING WITH POWER. Rustem K., Peck J., Kenyon L.; Department of Physical Therapy, College of Health Professions; Ripmaster C.; Lincoln Developmental Center, Grand Rapids, MI; Farris J; School of Engineering, Padnos College of Engineering and Computing.

PURPOSE: To describe the usefulness of a Power Wheelchair Trainer (PWCT) to provide persons with severe impairments an opportunity to

explore power mobility. **SUBJECTS:** Five students ages 7-24 with severe motor impairments were identified as having potential for power mobility, based on poor mobility skills as well as interest in the environment and desire to move. **METHODS AND MATERIALS:** This was a pilot study aimed at investigating the use of the PWCT. The PWCT is a motorized platform that temporarily converts a manual chair into a power chair, allowing individuals to practice using power mobility while using custom seating. Formal assessments were completed using the Power Mobility Screen and a modified version of the Pediatric Power Wheelchair Screening Test (PPWST). **ANALYSES:** Improvement between pre- and post-training assessment scores indicated improvement in potential for, or skill in, using power mobility. **RESULTS:** Three students significantly improved between pre- and post-training assessment scores: two progressed from poor to fair potential on the Power Mobility Screen, and one improved score on the PPWST by 10%. One student showed slight improvement on the Power Mobility Screen that was insufficient to show significant increase. One student's scores did not change. **CONCLUSIONS:** Students with severe motor impairments need customized equipment to allow independent mobility. The provision of customized seating, individualized switch systems, and adequate training time can allow them to demonstrate potential for power mobility. **ACKNOWLEDGEMENTS:** Financial support was provided by Grand Valley State University, Ronald McDonald House Charities of Outstate MI, and Mary Free Bed Fund.

English

(College of Liberal Arts and Sciences)

“YOU REMEMBER THE HARBOR” – STYLISTIC INTEGRITY AND LYRICAL RESONANCE IN ERNEST HEMINGWAY’S *IN OUR*

***TIME*. Olejnik, L;** Department of English, College of Liberal Arts and Sciences.

Background and Purpose: Scholarly debate surrounding Ernest Hemingway’s *In Our Time* (1925) centers largely on the view of this work as a collection of stylistically interwoven but loosely organized “miniatures” and short stories that demonstrate the promising talent of a young member of the “Lost Generation,” writers whose literary innovations mirrored the monumental shifts in cultural perceptions following World War I. This analysis asserts the structural integrity of Hemingway’s text and illustrates that, while *In Our Time* demonstrates modern literary influences, the work is stylistically, structurally, and thematically unique, set apart from work by other modernists and even Hemingway’s own later efforts. **Subjects, Methods, and Materials:** A close analysis of *In Our Time* as it compares to the styles and methods of major modern writers, particularly T.S. Eliot and Ezra

Pound. Other significant voices of the period, as well as and the findings of noted Hemingway scholars, Philip Young and Carlos Baker, and contemporary critics are also considered. **Conclusions:** *In Our Time* blends modern poetic techniques of fragmentation, compression, and lyricism with the narrative shifts and non-linear progression associated with modern prose. Unified by a dynamic emotive force, Hemingway's text is an imagistic, densely cinematic work, structurally complex yet unified, evocative, resonant – and unique. *In Our Time* presents an uncompromising view of humanity's struggle to find meaning in a fractured world, and the path it suggests in doing so– a focus on the inner strength of the individual to forge his own way– is pragmatic and distinctively American.

English

(College of Liberal Arts and Sciences)

UNMASKING THE MONSTER: THE NEW EROTIC IDENTITY OF THE MONSTER IN CONTEMPORARY LITERATURE Stabile, C.; Department of English, College of Liberal Arts and Sciences.

Over the last millennium, Western society has transitioned from a condition in which centralized belief and a lack of resources fostered interdependence necessary for basic survival to a post-modern, decentralized conglomeration of independent individuals seeking not merely self-benefit, but luxury and excess. During this social alteration, the iconic monsters we have created and accepted as a society have transformed drastically in shape as well as character to match our changing cultural mores. The image of the monster has shifted radically from an archetype that inspires fear and enforces social norms to a malleable *exotic other* who elicits desire and longing.

Through the examination of traditional or archetypal monsters, Grendel from *Beowulf* and Satan from *Paradise Lost*, the Romantic monsters of Frankenstein's Creation and Dracula (both from the original written works), and contemporary reflections of these monsters including those from John Gardner's *Grendel*, Robert Zemeckis' *Beowulf*, Anne Rice's *Interview with a Vampire*, John Carpenters *Bram Stoker's Dracula*, and Stephanie Meyer's *Twilight*, one can observe the transfiguration of the monsters image and action. Through close reading and analysis of these texts (both written and visual) using various theoretical lenses – while playing close attention to the sociological function of the monster – it becomes evident that the classic monster Grendel has “evolved” to Stephanie Meyer's Edward, signaling that what once acted as the signified evil has become nothing more than the signifier of self-indulgent wish-fulfillment.

Medical and Bioinformatics (Padnos College of Engineering and Computing)

SEARCHING FOR TEMPORAL PATTERNS IN TIME-SERIES

MICROARRAY DATA. Kutsumi Y, Tusch G, School of Computing and Information Systems, Padnos College of Engineering and Computing.

PURPOSE: Advances in microarray technology have led to highly complex datasets often addressing similar or related biological questions. Molecular biological research is often based on measurements that have been obtained at different points in time. The biologist looks at these values not as individual points, but as a progression over time. Our program (SPOT) helps the researcher find these patterns in large sets of microarray data.

PROCEDURES: A researcher proceeds through three subsequent steps: first, selection of microarray data of interesting experiments from a public functional genomics data repository, NCBI GEO, second, translating the temporal measurements into time intervals, and third, defining temporal concepts like “peaks” based on those intervals. Then he/she can search for genes that exhibit that particular pattern within the previously selected data pool. Knowledge-based temporal abstraction was used to analyze the microarray time series. **OUTCOME:** NCBI GEO is a public database for microarray, next-generation sequencing, and other forms of high-throughput functional genomic data submitted by the scientific community for gene expression analysis. We created a software tool using open-source platforms that supports the R statistical package, PHP, Bioconductor, and Web 2.0 knowledge representation standards using the open source Semantic Web tool Protégé-OWL. The poster focuses on the web interface that connects to these different programs. It was thoroughly tested using test cases from NCBI GEO. **IMPACT:** Analysis of temporal gene expression data using microarrays presents a novel opportunity to identify new drug targets and is one potential step to evaluate drugs for their overall effects.

Nursing

(Kirkhof College of Nursing)

MEETING TEENS WHERE THEY ARE: THE FEASIBILITY OF A COGNITIVE BEHAVIORAL INTERVENTION FOR DEPRESSED ADOLESCENTS IN PEDIATRIC PRIMARY CARE Lubbers, JL, Bostrom, A; Kirkhof College of Nursing.

PURPOSE: Depression among adolescents is under-identified and undertreated due to challenges within mental health systems and primary care settings, resulting in poor outcomes. This study expands the role of the

Pediatric Nurse Practitioner in primary care by redesigning the detection and treatment of depressed adolescents. **SUBJECTS:** A convenience sample of 25-30 adolescents between the ages of 14-18 will be used. **METHODS AND MATERIALS:** An evidence-based, 7-session curriculum (“Creating Opportunities for Personal Empowerment” or COPE) with homework utilizing a manualized cognitive behavioral intervention will be implemented in a primary care practice in a Midwestern town. **ANALYSES:** Outcome measures include: 1) improvement in depression-related outcomes as measured by the PHQ-9 and the Youth Self Report; 2) adolescent satisfaction with care received as measured by the Youth Client Satisfaction Questionnaire; and, 3) a qualitative measure of pediatric primary care provider satisfaction. **RESULTS:** Data collection and evaluation are in process.

Nursing

(Kirkhof College of Nursing)

AN EVIDENCE-BASED APPROACH FOR THE DEVELOPMENT OF A HEALTH AND WELLNESS PROGRAM WITHIN A COMMUNITY CENTER FOR OLDER ADULTS. Sypniewski, R, McCurren, C; Kirkhof College of Nursing.

PURPOSE: The purpose of this project is to develop a strategic plan for an evidence-based nurse-led model designed to provide health services and wellness care to older adults participating in a senior community center located in the Midwest. **PROCEDURES:** A comprehensive review of the literature has been completed to identify successful models of care and wellness programs for older adults. A needs assessment related to sustaining optimal health, developed for the project, was completed by 107 members. The results of the literature review and needs assessment informed the selection of a model designed to provide health services and wellness care to older adults. **OUTCOME:** A full project plan will be developed to include; 1) assessment of resources needed for implementation (human, physical, financial); 2) timeline for phased implementation; 3) an evaluation model based on desired outcome measures, with timeline; 4) proposed funding models; and 5) a nurse-led demonstration project designed to manage chronic disease and promote wellness initiatives, incorporating students from a local university nursing program. **IMPACT:** More than three-quarters of adults over the age of 65 suffer from at least one chronic medical condition that requires ongoing care and management. These older adults face challenges in their efforts to attain their best state of wellness. It is essential that older adults are able to manage their chronic conditions. A health services and wellness program can assist older adults in achieving their goals.

EXERCISE RESPONSE IN NON-AMBULATORY INDIVIDUALS WITH MULTIPLE SCLEROSIS: A MULTIPLE SINGLE SUBJECT DESIGN. Baker, B.

Shoemaker, M, Holochwost, N, Mirakovits, L, Newell, B, Robinson, D; Department of Physical Therapy, College of Health Professions.

Introduction: There is no evidence showing the benefits of exercise in individuals with MS who are non-ambulatory. The purpose of this study is to explore if exercise will improve the function and quality of life in these individuals. **Subjects:** Two individuals who had MS and were non-ambulatory participated. **Methods and Materials:** An AB research design was implemented over the course of 10 weeks with follow-up at four weeks post intervention. Phase A served as a two week control period and phase B consisted of eight weeks of exercise training with the following outcome measures administered weekly; the Modified Fatigue Impact Scale (MFIS), Short Form-12 Questionnaire (SF-12), Patient Specific Functional Scale (PSFS), handheld grip dynamometry, submaximal upper body ergometry, and limits of stability via the Equitest System. **Analysis:** Meaningful changes were determined using the two standard deviation band method. **Results:** Participant 1 showed significant improvements in the Cognitive MFIS, and demonstrated an improvement on the PSFS. Significant improvements in both right and left grip strength improved. Participant 2 demonstrated significant improvements in the Cognitive, Physical and Psychosocial MFIS. A significant improvement in the Mental Composite SF-12 was found, as well as significant improvements on the PSFS. Equitest measures of directional control, end point excursion and maximal excursion improved for both participants. **Conclusion:** Meaningful impairment-based measures of dynamic sitting balance improved in both participants and arm strength improved in Participant 1. Meaningful functional improvements occurred in fatigue, quality of life measures, patient specified functional tasks and cardiovascular response for both participants.

COMMUNITY-BASED PARTICIPATORY RESEARCH: HOW DEVELOPING SMALL GEOGRAPHY HEALTH INDICATORS CAN ASSIST COMMUNITIES WITH BIG DECISIONS. Cochran, M.

Dulhos, C, Eckdom, R, Ewing, J, Flanders, J; School of Public, Nonprofit and Health Administration, College of Community and Public Service.

PURPOSE: The Ottawa County Health Department (OCHD) and the Graduate Student Consulting Center (GSCC) at Grand Valley State University engaged in community-based participatory research to build community capacity toward addressing food insecurity. **CHALLENGE:** With nearly 20% of the Michigan population receiving food stamps coupled with increasing rates of obesity and obesity-related chronic disease, GSCC conducted an environmental scan for OCHD in support of a larger food security strategic planning initiative. **EXPERIENCE:** GSCC students employed Geographic Information Systems to map measureable health indicators at the census tract level. **OUTCOME:** The goal of the project is to provide stakeholders with the information required make appropriate investment decisions at the community level. Based on Healthy People 2020 indicators, the analysis and subsequent baseline measures are being used to monitor changes and to gain understanding of the extent to which community needs are being met relative to other areas of the state and nation. For example, GSCC mapped the proportion of the population with access to nutrient dense foods (Objective NWS-4) while also surveying emergency food providers (churches and nonprofits) about capacities to provide such staples as lean meats, fresh fruits and vegetables to those seeking services. In addition, GSCC analyzed indicators associated with the social determinants of health, such as poverty, ethnicity, age, and income. **IMPACT:** GSCC participants are developing the practical skills and expertise required of future public health leaders to bridge the gap between research and community practice within Ottawa County to improve health while reducing food insecurity.

Public Administration

(College of Community and Public Service)

CITY OF GRAND RAPIDS RECYCLING PROGRAM. Dickinson, A; School of Public, Nonprofit and Health Administration, College of Community and Public Service.

Background and Purpose: The City of Grand Rapids has been increasing their sustainable practices by expanding and streamlining their recycling program. One of the ways in which Grand Rapids has been improving their program is through the use of a Geographical Information System (GIS). GIS is a computer software that combines mathematical statistics with area maps. The use of GIS not only improves the city's customer relations and efficiency, it also helps improve the city's supplier relations with Cascade Engineering (CE). CE is a local plastics manufacturer who supplies the city with its recycling bins and carts. The GIS data which the city obtains can be related to CE to help improve their residential products, shipping timelines,

and customer demands. The purpose of this study is to identify the distribution of recycling customers throughout the neighborhoods of Grand Rapids, in relation to the population and housing units of those neighborhoods, in order to better understand how the City can improve its recycling services. **Methods and Implications:** For each of the 37 neighborhoods of Grand Rapids, the percentage of housing units that are current recycling customers and the percentage of the population that are current recycling customers were determined. The City of Grand Rapids and CE use this information to decide which neighborhoods have the greatest room for increasing the number of customers and satisfying their needs.

Public Administration

(College of Community and Public Service)

MICHIGAN FARMLAND AND INCOME, Mersman, BM; School of Public, Nonprofit and Health Administration, College of Community and Public Service.

Background: Agriculture is Michigan's second largest industry and yet many counties throughout the state continue to lose valuable farmland to urban sprawl. Agriculture continues to play a significant role in Michigan's economy and we must examine the economic impacts the loss of farmland is having throughout the state. The purpose of this study was to examine the loss of farmland by county in the state and to examine the income from farms in these counties. **Methods:** USDA Census County Summary Highlights were used to compare acres of farmland from 2002 to 2007. USDA Statistics Service Quick Stats was also used to compare net income from farmland based on a county wide level from 2002 to 2007. The data was unavailable for net income in 1997. The data was charted on geographical information software (GIS) to map and compare the results. **Results:** Several counties in Michigan lost farmland between 2002 and 2007 and several counties also gained farmland. The maps show 10 counties in 2002 had a negative net income and only 7 counties had a negative net income in 2007. The final map shows the percent change in acres from 2002-2007. The results show net income increased in most of the counties which experienced a loss of farmland when comparing the percent change in farmland to net income. **Implications:** This work reveals how the importance of this industry in Michigan cannot be highlighted enough due to the significant role it can have in our economy.

BARRIERS TO EVALUATION IN DEVELOPING COUNTRIES. Key, K;
School of Public, Nonprofit and Health Administration, College of
Community and Public Service.

The author takes an exploratory research approach to discovering barriers to evaluation and evaluation capacity building for nongovernmental organizations (NGOs) operating within developing countries. Secondary research is performed including a thorough review of available academic literature on evaluation and evaluation capacity building. The research focuses on understanding the factors limiting evaluation practices in developing countries including the unique environment, impact of resource dependency theory and the importance of stakeholder engagement. The author finds most barriers to evaluation relate to six common categories; technology, language, illiteracy, organizational learning, culture and political. A brief case is provided using a Ghanaian anti child-trafficking organization to demonstrate the common barriers to evaluation found in developing countries. Volkov and King's *Checklist for Building Organizational Evaluation Capacity*, Stufflebeam's *Institutionalizing Evaluation*, and Preskill and Torres' *Readiness for Organizational Learning and Evaluation (ROLE)* survey instrument are used to demonstrate organizational readiness for evaluation. The author presents recommendations to maximize ECB for organizations operating in developing countries including the use of theory of change models, logic models and evaluation framework. Data collection tools and methods are suggested taking into consideration the potential barriers to evaluation in developing countries. This project suggests a mixed methods approach to collecting data in developing countries and provides suggestions for both quantitative and qualitative measures. Long term suggestions on maximizing ECB and recommendations on how to improve program evaluation are also provided.

THE IMPACT OF TRAUMA AND PTSD ON AGING REFUGEES IN THE UNITED STATES: A REVIEW OF THE LITERATURE. Engelsma, R;
School of Social Work, College of Community and Public Service.

Background and Purpose: Trauma and Post-traumatic Stress Disorder (PTSD) can have a profound impact on an individual's mental and physical health. As large numbers of refugees presenting with past trauma and chronic or acute PTSD are being resettled within Michigan and the United

States in general, health professionals will be confronted with treating these individuals. In order to be effective practitioners, collaboration between medical health and mental health professions is essential to understand the refugee from a culturally competent perspective. **Methods:** Using a biopsychosocial approach, a review of current research on the impact of PTSD and trauma on aging was conducted to determine relevancy with emerging trends. **Impact and Implications:** Available research supports the theory that trauma and PTSD do, in fact, have a significant impact on the aging process of refugees, with negative impact on significant biological, psychological, and social functions of aging refugees. There appears to be a general accelerated aging process that occurs in refugees with significant trauma background. **Conclusions:** Trauma and PTSD have a significant impact on the aging process in refugees, affecting biological, psychological, and social well-being. Collaboration among mental and medical health professionals is highly recommended as some negative effects of PTSD manifest in physical symptoms. Effective treatment also requires a culturally competent perspective.