

Twelfth Annual  
**LOURDES UNIVERSITY**

**Research  
&  
Scholarship  
Symposium**



**Monday, April 25, 2016**

**4 - 9 p.m.**

**Franciscan Center**



**LOURDES**  
UNIVERSITY





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# Schedule



<b>Welcome</b> .....	4 - 4:05 p.m.
James Minesky, Thomas Estrella, Co-Chairs, Student Research and Scholarship Committee Dr. David J. Livingston, President, Lourdes University Dr. Geoffrey J. Grubb, Provost	
<b>Keynote Speaker</b> .....	4:05 - 4:20 p.m.
Dr. Keith Burwell, President of the Toledo Community Foundation	
<b>Poster Presentations</b> .....	4 - 8:30 p.m.
<b>Oral Presentations</b> .....	4:30 - 9 p.m.





Twelfth Annual Research & Scholarship Symposium  
April 25, 2016

**PRESENTATION SCHEDULE**

4 - 8:30 p.m.	Poster Presentations	<i>Franciscan Center Commons</i>
4:30 - 9 p.m.	Oral Presentations	<i>Conference Room A</i>
4:30 - 5 p.m.		<b>Bryan Downs</b> ~ Undergraduate <i>Cardiac and Skeletal Muscle Cell Hyperplasia</i>
5 - 5:30 p.m.		<b>Andrew Thomas</b> ~ Undergraduate <i>Indigenous Yeast vs. Cultured Yeast in California Winemaking</i>
5:30 - 6 p.m.		<b>Noah Roper</b> ~ Undergraduate <i>The Effects of Triclosan in Aquatic Environments on the Evolution of Anti-Bacterial Resistant Genes in Escherichia coli</i>
6 - 6:30 p.m.		<b>Taylor Maley</b> ~ Undergraduate <i>The Impact of Plastination on the Future Education of Medical Professionals</i>
6:30 - 7 p.m.		<b>Open</b>
7 - 7:30 p.m.		<b>Payton Wojcinski</b> ~ Undergraduate <i>Periodontal Disease: A Cause of Heart Disease?</i>
7:30 - 8 p.m.		<b>Megan Smith</b> ~ Undergraduate <i>Risk Factors Increasing the Incidence of Non-Contact Knee Injuries among Athletes</i>
8 - 8:30 p.m.		<b>Open</b>
8:30 - 9 p.m.		<b>Open</b>



Twelfth Annual Research & Scholarship Symposium  
April 25, 2016

PRESENTATION SCHEDULE

4 - 8:30 p.m.	Poster Presentation	<i>Franciscan Center Commons</i>
4:30 - 9 p.m.	Oral Presentations	<i>Conference Room B</i>
4:30 - 5 p.m.		<b>Kevin Nemer</b> ~ Undergraduate <i>Competitive Interactions of Garlic Mustard (<i>Alliaria petiolata</i>) and Black Velvet Petunia (<i>Petunia hybridia</i>)</i>
5 - 5:30 p.m.		<b>Jeremy Wood</b> ~ Undergraduate <i>Applications of 3-D Bioprinting: Can It Be Successfully Used as an Alternative to Organ Donation?</i>
5:30 - 6 p.m.		<b>Brandon Oneail</b> ~ Undergraduate <i>The Effects of Activated Carbon on the Presence of Cyanobacteria and Cyanotoxins</i>
6 - 6:30 p.m.		<b>Open</b>
6:30 - 7 p.m.		<b>Sara Ondrus</b> ~ Undergraduate <i>Investigating Indoor Air Contaminants</i>
7 - 7:30 p.m.		<b>Lauren Pelton</b> ~ Undergraduate <i>The Detection of Antimicrobial Agents in the Bark of Local Tree Species</i>
7:30 - 8 p.m.		<b>Elijah Walters</b> ~ Undergraduate <i>The Effect of Nicotine and Diphenhydramine on Flatworm Regeneration</i>
8 - 8:30 p.m.		<b>Yaritza Jimenez</b> ~ Undergraduate <i>The Importance of Nutrition in the Prevention of Heart Disease</i>
8:30 - 9 p.m.		<b>Tristin Crawley</b> ~ Undergraduate <i>The Effects of Mouthwash on Two Species Commonly Associated with Tooth Decay and Gingivitis: <i>Streptococcus mutans</i> and <i>Lactobacillus fermentum</i></i>



Eleventh Annual Research & Scholarship Symposium  
April 25, 2016

**PRESENTATION SCHEDULE**

4 - 8:30 p.m.	Poster Presentation	<i>Franciscan Center Commons</i>
4:30 - 9 p.m.	Oral Presentations	<i>Board Room</i>
4:30 - 5 p.m.	Open	
5 - 5:30 p.m.	<b>SWK 413/SWK 418</b> ~ Undergraduate	<i>Consumer Perception of Cultural Competence of Mental Health Services</i>
5:30 - 6 p.m.	<b>Jordan Westgate</b> ~ Undergraduate	<i>Major Roles in Religiosity: Looking at College Majors, Sex and Age</i>
6 - 6:30 p.m.	<b>Corinne Eber</b> ~ Undergraduate	<i>Influences of Early Education Institutions on the Development of Altruism</i>
6:30 - 7 p.m.	Open	
7 - 7:30 p.m.	Open	
7:30 - 8 p.m.	<b>Ashley Langenderfer</b> ~ Undergraduate	<i>A Comprehensive Look into the Life and Works of Gustav Klimt</i>
8 - 8:30 p.m.	<b>Veronica Lark</b> ~ Undergraduate	<i>Connecting Cultures through Close Reading: Literary Performance and the Logic of Accountability</i>



Twelfth Annual  
LOURDES UNIVERSITY  
**Research  
&  
Scholarship  
Symposium**

**Monday, April 25, 2016  
4 – 9:00 p.m.**

**Franciscan Center of Lourdes University  
Sylvania, Ohio**



## **Introduction**

**T**he Lourdes University community welcomes you to our Annual Research and Scholarship Symposium. We are proud to showcase the research of our graduate and undergraduate students. You will note that their research is presented in two formats: poster and oral presentations.

The poster presentations represent various research projects completed by students as capstone or course requirements. Oral presentations follow a prearranged program. Please consult the scrolling digital program/schedule for more information.

Thank you for joining us to celebrate the accomplishments of our students.

*The abstracts in this booklet are arranged in five groups – Graduate M.B.A., Graduate M.Ed., Graduate M.O.L., Graduate M.S.N., and Undergraduate (alphabetically according to the first author's last name.)*

*Please Note: Not all Colleges listed may have applications submitted for this symposium.*



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## Research & Scholarship Symposium Abstracts 2016



### Graduate

**Title:**                    **The Kindergarten Entrance Date: What Are Some Current Kindergarten Teachers' Perceptions of the Cutoff Date Regarding Student Readiness For Entering Kindergarten in Lucas County, Ohio?**

**Author:**                *Jennifer Bicanovsky*

**Class:**                 EDU 621: Capstone Research

**Faculty Advisor:** Adam Vrabel, PhD

I am a kindergarten teacher in Lucas County, The kindergarten teachers in the district I work for have been discussing the entrance date for kindergarten. I have taken an interest in the topic. I will have completed a survey of kindergarten teachers from 2 of the 8 public school districts in Lucas County, Ohio regarding the teachers' perceptions of the cutoff date being used by the school district. The kindergarten teachers from Washington Local Schools and Sylvania Schools will receive the survey. Washington Local Schools use the cutoff date of September 30th while Sylvania Schools use the August 1st cutoff date. The recent changes in education to full-day kindergarten and the implementation of the Common Core Standards has made for a more rigorous kindergarten experience than in the past (Freedberg & Udesky, 2014) . I will be looking for trends, key words, and commonalities or discrepancies in the survey responses. The survey results will allow me to review the opinions and views of some local teachers. I am interested to see how they are feeling about the starting date being used in their district.



**Title:** How Are Primary Grade Teachers Using Data to Make Decisions That Drive Their Classroom Instruction?  
**Author:** *Katie Gilsdorf*  
**Class:** EDU 621: Capstone Research  
**Faculty Advisor:** Carol Schwartz, PhD

Data-driven instruction and data-driven decision-making are the process of using various forms of data collection to analyze and gather information from. Typically educators gather assessment data from standardized norm assessments (MAP, 3rd Grade Reading Guarantee, OAA, etc.), screening assessments (Dibels, STAR, Accelerated Reading assessment, etc.), formative assessments to check understanding, and summative, end-of-unit testing. The information gathered typically helps identify strengths and deficiencies in student learning, achievement gaps, areas where instruction is needed, progress monitoring, and other educational areas of concern. When used properly, data provides teachers with knowledge about their students that is not always obvious. A current trend in education is the use of professional development (PD) to inform and teach educators on the use of data to drive decision-making in their classrooms, schools, and districts. Catholic schools are chartered and run independently. Unlike public school districts, Catholic schools are not uniform in the professional development they offer or require of teachers. Teachers were surveyed based on the following constructs:

- Construct 1: Teacher demographic info
- Construct 2: Data collection demographics
- Construct 3: Analyzing and using student data
- Construct 4: Implementation and instructional practices
- Construct 5: Teacher beliefs regarding a data-driven culture



**Title:** **Guiding Young Readers the Multi-Sensory Way**  
**Author:** *Pamela Sobecki*  
**Class:** EDU 621: Capstone Research  
**Faculty Advisor:** Michael Smith, PhD

Phonics is a topic of thoughtful research in the realm of learning to read, especially in the primary grades. My project is investigating the use of multi-sensory approaches to help encode phonics lessons. Multi-sensory reading instruction involves using visual, auditory, and kinesthetic/tactile learning pathways. Any of the five senses can be used to create this pathway. The research is currently being conducted over a four week period where striving kindergarten students are receiving small group (two to four students in a group) reading intervention for ten minutes 3 three times a week. The Orton-Gillingham and Orton-Gillingham –based reading instruction uses multi-sensory approaches. These programs have been around since the 1940's, but current research finds insufficient evidence to conclude that these instructions meet the requirement of scientifically-based reading instruction. I seek to put multi-sensory approaches to the “test” and investigate the outcomes. In a quasi-experimental approach, before and after data from a reliable phonics screen will measure growth (if any) in alphabet identification and simple word blending. Will a strategic ten minute multi-sensory mini-phonics lesson improve the decoding and blending ability of kindergarten students? Will this be a productive method to incorporate into my weekly intervention practice?



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## Research & Scholarship Symposium Abstracts 2015



### Undergraduate

- Title:** **Consumer Perception of Cultural Competence of Mental Health Services**
- Authors:** *Nikki Artiaga, Benjamin Barrett, Deborah Bihn, Laura Butler, Ashley Chambers, JoLon Clark, Constance Conner, Courtney Eff, Corinne Ellefsen, Nicholas Flasco, Heather Hallett, Kayla Lehmann, Kathryn Long, Sarah Lyczkowski, Carolyn Manley, Brianna Megyesi, Stefani Michalski, Marissa Murray, Jessica Oley, Inez Parker, Marisol Perez-Hales, Maritza Quinones, Eden Smith, Michelle Steingesser, Ashley Sullivan, Kevin Swaney, Elizabeth Theaker, Dair Yorde*
- Class:** SWK 413 - Practice Oriented Research  
SWK 418 – Social Work Process III
- Faculty Advisor:** Terry Keller, MSW, Joyce Litten, EdD

The development of culturally competent services is a major goal in the field of behavior health. More than a decade ago (2001), the US Surgeon General first documented substantial differences in mental health service utilization between race and ethnic groups. Locally, the Mental Health & Recovery Services Board of Lucas County recognized a responsibility to address the widely diverse population of consumers with unique experiences and needs. The prospect of student involvement in exploring consumer perception emerged from a workgroup of the Board that focuses on disparities in service delivery. In response, this project was developed in spring 2016 semester through 2 courses: SWK 418: Social Work Process III and SWK 413: Practice Oriented Research. Students created a survey that collected data on consumer's perception of services as correlated to their racial/ethnic and cultural identities. The survey was distributed and collected by students at 3 sites that provide mental health services through the Board. The data from the survey was analyzed through SPSS, and a report of findings was generated for the Board. It is expected that the report will inform any change in policy and service delivery to better address consumer racial, ethnic and cultural identity.



**Title:** **Determining Molecular Chirality Using Doped Cholesteric Liquid Crystals**

**Author:** *John Bazydlo, Mary Busse, Brooke Diekman, Ben Lapointe, Nicholas Maurer, Erin O'Neil, Andrew Thomas*

**Class:** CHL 302: Organic Chemistry II Lab

**Faculty Advisors:** Sr. Barbara Stallman, PhD

This project focuses on the synthesis, purification and characterization of the chiral dopant, N-(4-phenylbenzylidene)-1-phenylethanamine (PBPEA) which is synthesized from either R- or S-1-phenylethylamine and biphenyl-4-carboxaldehyde. The chiral properties of PBPEA are determined using the selective reflection of circularly polarized light through a liquid crystal matrix that is doped by the chiral PBPEA. The liquid crystal matrix is composed of two achiral liquid crystal materials: N-(4-methoxybenzylidene)-4-butylaniline, MBBA, and N-(4-ethoxybenzylidene)-4-butylaniline, EBBA. Addition of the chiral dopant induces a change from the nematic structure of the liquid crystal to a chiral helical structure. The R and S enantiomers of PBPEA induce the formation of either right-handed or left-handed helices that reflect circularly polarized light in opposite directions with a handedness that depends on the absolute configuration of the dopant.



- Title:** **Canticle Center Oak Openings Restoration**
- Authors:** *Patrick Bronson, David Dalton, Nicholas Maurer, Matthew Olsavsky, Gabriel Rivera*
- Class:** ENV 432: Ecological Restoration  
ENV 433: Practicum in Ecological Restoration
- Faculty Advisor:** James Minesky, PhD

The vacant land at the Canticle Center of Lourdes University has many invasive plants, low biodiversity, and provides little ecological and educational value. This area is part of the Oak Openings Region, where many habitats have been destroyed. This project uses ecological methods to restore examples of Oak Openings habitats, such as prairies and oak savannas. The plan calls for establishing native grasses, forbs, shrubs, and trees. Mounds of sandy soil on the site will function as dunes for an oak savanna that would have been typical to the region. The 1.5-acre project site is intended to provide opportunities for courses, student research, relaxation, and nature education. Plaques along a pathway will educate visitors about native plants and habitats of the Oak Openings. This will be a place for students to engage in learning with a possible outdoor lab, lecture, and research area. The site will promote Franciscan values by serving the educational needs of the university, serving the community, and showing reverence to rare habitats once common to the region. Plans are for the site to serve community partners such as the Metroparks of the Toledo Area and Olander Park System through the exchange of seeds and knowledge.



**Title:** **The Effect of Light and Chemicals on the Color of Pigments and Dyes, and Reproduction of a Classic Work of Art**

**Authors:** *Mason Bryan, Tristin Crawley, Gabriella Crisp, Mariah DuPree, Robert Erickson, Cory Fallwell, Melissa Hart, Jonathan Hunyadi, Robyn Jefferson-Colbert, Daniel Krueger, Brandy Lowery, Jonelle Meyer, Allison Oswald, Olivia Stanton*

**Class:** CHM/CHL 182: General College Chemistry II

**Faculty Advisor:** Elizabeth T. Wise, PhD

The purpose of the project was to explore the role of chemistry in the creation, analysis, and conservation of art objects. Students studied the effect of environmental chemicals – oxidizing and reducing agents, acids and bases, and “hard water” – on the color of natural and synthetic dyes used in art and on fabrics. Each dye solution was separately mixed with an environmental chemical in a multiple-well microplate, and the color of each resulting mixture was observed. In another study, experimenters examined the effect of ultraviolet light and artificial daylight on the color of two pigments – cochineal (or carmine) lake and alizarin crimson. Samples of each pigment in watercolor and acrylic media were exposed to light in closed boxes for about two months, and three color attributes were measured each week using a Minolta CR410 color meter. In a final activity, each student reproduced a portion of Vincent Van Gogh’s “Shoes” using the fresco technique, in which paint is applied to wet plaster. Although red lake pigments, such as cochineal lake, are prone to fading upon exposure to light, Vincent Van Gogh admired their vibrant colors and attempted to compensate for their color loss by using bold, thick brushstrokes.



**Title:** Does Gender Affect the Rating of Video Game Characters?

**Authors:** *Taylor Burroughs, JoLon Clark, Constance Conner, Michael Gill-Jacobson*

**Class:** SOC 491: Capstone

**Faculty Advisor:** Therese Hoffman, PhD

The proposed study is designed to examine the relationship between the gender of video game characters and how participants rate the video game characters' attributes. A review of past research examining gender stereotypes and video games suggests that the regular consumption of stereotyped gender roles has an effect on the way that people come to think about males and females in the real world which may translate to how individuals perceive male and female video game characters. If attributes such as physical strength, leadership, inspiring fear, and athletic ability are important, then it is expected that participants will be more likely to rate male video game characters higher on these attributes than female characters. An additional research question examined is whether male participants will rate male or female video game characters more or less positively than female participants.



**Title:** **How Gender Differences Effect Showing Positive Affection**

**Author:** *Linda Cabaj, Kaytlyn Dowden, Tabitha Howell, Lindsey Moyer, Megan Stoepler, Marisa Wagner*

**Class:** PSY 250: Experimental Psychology

**Faculty Advisors:** Matthew Lancaster, PhD

The purpose of this experiment is to determine whether males or females are more likely to show positive affection to a stranger in a nonverbal manner. The research takes into account the positive or negative facial expressions of the person receiving the positive affection. Past research by Smith (2014) indicated that woman are more strongly tied to emotions than males. The experiment examines if showing public affection changes between males and females or if it stays the same. The project will include a male and female volunteer who will hold a “free hugs” sign in a public place. Observers will record the amount of interactions each volunteer receives. The project will be split into two different days, one day being designated to a male holding the “free hugs” sign, he will be smiling half of the time and frowning half of the time. The second day will be a female holding the “free hugs” sign, half the time she will be smiling and half the time she will be frowning. It is expected that females will show and receive positive affection from either sex rather than males.



**Title:** **The Effects of Mouthwash on Two Species Commonly Associated with Tooth Decay and Gingivitis: *Streptococcus mutans* and *Lactobacillus fermentum***

**Author:** *Tristin Crawley*

**Class:** BIO 490: Capstone

**Faculty Advisor:** James Chamberlain, MA, Elizabeth Wise, PhD, April Andrews, BA

The bacteria *Streptococcus mutans* and *Lactobacillus fermentum* cause tooth decay and contribute to the development of gingivitis (Karpiński & Szkaradkiewicz, 2013). Actually, tooth decay can lead to gingivitis, but also additional problems such as abscess formation, tooth loss, and infection (Fotek, 2016). Gingivitis itself can cause the development of periodontitis, a painful and permanent disease affecting the gingiva. Gingivitis can also lead to heart disease and stroke (Colgate, 2013). Some people develop dental caries and symptoms of gingivitis and choose to treat themselves at home (Colgate, 2016). Because of this, it is important to assess whether or not a mouth rinse might be effective enough where people who cannot afford dental care can resort to using these rinses for treatment along with regular brushing and flossing. It is important to know if a dental visit is essential, or if these people can rely on over-the-counter options. The aim of this experiment is to study the effectiveness of various mouth rinses against *Streptococcus mutans* and *Lactobacillus fermentum* to prevent tooth decay and gingivitis. The filter-paper disc method will be used to evaluate this, and the zone of inhibition will be measured to estimate the antiseptic properties of the tested products.



**Title:** **Impacts of Waves in our Electronically Dependent Society**

**Author:** *Tristin Crawley, Bryan Downs, Kristi Layman, Kevin Nemer, Lauren Pelton, Grant Smalley, Megan Smith*

**Class:** PHS 202: College Physics II

**Faculty Advisors:** Cynthia Molitor, PhD

This study investigates the effects of waves from a physics perspective using research from literature. Many forms of waves exist and are used in a wide variety of applications that provide modern conveniences in our world. Waves allow humans to process light and sound while we harness natural forms of energy. However, waves can also negatively impact humans and our world. Cellular phones and electronic devices use “apps” that generate sound waves. Hearing thresholds will be examined in relation to such technological applications. Can sound frequencies be modified to improve the ability to hear higher frequencies to aid older adults or allow humans to understand animals? What are the effects of cellular and wifi signals on humans? Understanding brainwaves makes way for advances in virtual reality gaming and in treatments for neurodegenerative diseases. Our perception of sight relies on electromagnetic light waves but certain wavelengths of light can damage the eyes. Technology in lens coatings aids in reflecting or absorbing high energy light given off by cell phones. Society relies on energy and harnessing energy from ocean waves is a “green” way to produce energy. Advances in hydroelectric power will be explored. Lastly, high energy from an electromagnetic pulse (EMP) can create havoc in an electric dependent nation. The effects of short bursts of electromagnetic energy will be examined for an EMP event.



**Title:** Cardiac and Skeletal Muscle Cell Hyperplasia  
**Author:** Bryan Downs  
**Class:** BIO 490: Capstone  
**Faculty Advisor:** Anjali Gray, PhD, Christine Boudrie, MD,  
Judi Nath, PhD

Cardiac and Skeletal muscles are present in all humans and will increase in size as a person grows. Even after a person is fully grown, these muscles can still increase in size by *muscle hypertrophy*, which is an increase in the size of muscle fibers. The other mechanism by which these muscles can grow is called *hyperplasia*, which is the formation of new muscle fibers. Hyperplasia has been widely studied in many animal species, but not in humans. There are still many questions in the scientific community about the details of muscle hyperplasia in humans. This literature review will explore why and how muscle hyperplasia occurs in humans. This review will not only look at the mechanism of muscle growth, but also include nutrition, animal studies, human studies, and other dynamics that are important to understanding how and why muscle hyperplasia occurs in humans.



**Title:** **Influences of Early Education Institutions on the Development of Altruism**

**Author:** *Corinne Eber*

**Class:** PSY 490: Capstone

**Faculty Advisor:** Matthew Lancaster, PhD

Altruism is defined most popularly by Batson and Shaw (1991) as a, “motivational state with the ultimate goal of increasing another’s welfare.” Most commonly we define altruism as being selfless and not expecting a reward. This study focuses on altruism, specifically on what influences the development of altruism. This study specifically questions if different types of educational institutions influence the level of altruism a person develops, specifically, if the majority of a child’s time is spent in elementary school, either at a private religious school, a private secular school, or a public school increases altruistic behavior. Along with testing altruism, this study will also be looking closely to see if there is any relationship between altruism and a person’s political view. In this study we hypothesize that private religious institutions will score higher in altruism than the other secular institutions, and subjects who are liberal, economically and socially, will score higher than those who are conservatives. Liberals who went to private religious schools and are liberal economically and socially will score the highest of everyone.



**Title:** *Trypanosoma brucei* Infection: Epidemiology, Diagnosis, and Prevention

**Author:** Robert Erickson

**Class:** BIL 202: Biology Lab

**Faculty Advisor:** James Chamberlain, MA

The topic for this project is the parasitic protozoan *Trypanosoma*. *Trypanosoma brucei* is the parasite that causes African trypanosomiasis otherwise known as African Sleeping Sickness. The research will concentrate on reviewing scientific publications on the specific epidemiology of *Trypanosoma brucei*, and a study of the life cycle of the species as it relates to the transmission of the parasitic infection in humans. It is transmitted by the tsetse fly to its human host, and is predominately found in East and West Africa. Two main subspecies of *T. brucei* exist; *T.b. rhodesiense* and *T.b. gambiense*. Both types of infection can lead to coma and death. Based upon the published research of the life cycle of the protozoan species, CDC data on infection rates, and susceptible populations, an examination of effective preventative measures will be discussed.



**Title:** **Social Emotional Learning and  
Preschool Children Anxiety**

**Authors:** *Heather Hallett, Brianna Megyesi*

**Class:** SWK 413: Practice Oriented Research

**Faculty Advisor:** Terry Keller, MSW

The researchers recognize the prevalence of anxiety among children and seek to provide more research on how implementing a social emotional learning curriculum could possibly benefit children at risk of developing anxiety. The proposed research would explore the impact of administering a social emotional learning curriculum in a preschool on children's anxiety levels. The researchers hypothesize that implementing a social emotional learning curriculum would result in lower anxiety levels in children. This study is important because it would provide significant information for school social workers, teachers, child psychologists, and other professionals who focus on early intervention.



**Title:** **The Effects of Gender on the Perpetuation of Gender Stereotyped Childhood Toys**

**Author:** *Dakota Harrell, Delesha Hutchen, Charee Jones, Ruben Lopez, Rachel Losey, Nichole Rorigi*

**Class:** PSY 250: Experimental Psychology

**Faculty Advisor:** Matthew Lancaster, PhD

Our project focused on how gender norms illustrated by gendered toys impacts adult gender stereotypes. Eisenberg-Berg, Boothby, and Matson (1979) set out to understand the correlations of toy preferences. Eisenberg-Berg et al. (1979) found that female preference for feminine toys was positively correlated to time spent with other females, while preference for masculine toys was vice versa. For our research, participants were given a questionnaire regarding the images of male, female and neutral toys that were presented to them. We hypothesized that males would identify more with masculine toys while females would identify more with feminine toys. Participants were asked to choose gender appropriate toys for their hypothetical children based off of the type of environment they were raised in. It is likely that the stereotypes presented in their youth would be passed down to the next generation. We also hypothesized that what people are taught at an early age can correlate to how they teach as an adult. With our experiment we hoped to find evidence explaining why stereotypes are created and propose how to create a more generalized perception concerning gender.



**Title:** **High School Based Sex Education and the Knowledge and Risky Sexual Behaviors in First Time College Freshman**

**Author:** *Julie Hoffman*

**Class:** PSY 490: Capstone

**Faculty Advisors:** Matthew Lancaster, PhD

The current study explores the relationship between the levels of sex education, as it pertains to detailed STI information and safe sex practices. According to the Centers for Disease Control and Prevention, a 2013 survey of U.S. high school students found increased percentages of those who had ever had sexual intercourse and a decrease in condom use, higher numbers of overall sexual partners and a low percentage of HIV testing. Also, nearly half of the 20 million new STD's each year were among young people, between the ages of 15 to 24 (Centers for Disease Control and Prevention, 2015). Abstinence plus education programs result in lower number of STI's among young adults, increased contraceptive use, and delayed sexual activity (Kirby & Laris, 2009). However, the results reported from the CDC study referenced above, give alarming statistics and cause for concern that the programs being offered or provided to 15-18 year olds (average age of high school students) are not sufficiently detailed. Participants completed an anonymous online survey measuring risky sexual behavior, sexual knowledge, and amount of high school sex education. It is expected that those who have less sex education will score higher in risky sexual behavior and lower in sexual knowledge.



**Title:** **The Importance of Nutrition in the Prevention of Heart Disease**

**Author:** *Yaritza Jimenez*

**Class:** BIO 490: Capstone

**Faculty Advisors:** James Chamberlain, MA, Kristin Moline, MSED, Judi Nath, PhD

The purpose of this research is to conduct a literature review of scientific research on heart disease examine the importance of nutrition in the prevention heart disease. Certain types of heart disease are affecting our citizens as a result of changes in our diet and lifestyle. It has been shown that one of the major cause of heart diseases among the world's population results from poor daily habits and bad nutrition. Good nutrition and a healthy lifestyle are the best weapons to fight cardiovascular disease. This research will provide information that shows how different factors have been the main cause of heart diseases in humans throughout the world. For example: age, obesity, genetics, diabetes, cholesterol, blood pressure, smoking, and alcohol. The problem of cardiovascular disease is the accumulation of organic matter, mostly fat and cholesterol, within the blood vessels. In conclusion, this research supports and informs their readers that bad nutrition can cause heart disease and the negative impacts it has on a person's body.



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**Title:** **A Comprehensive Look into the Life and Works of Gustav Klimt**  
**Author:** *Ashley Langenderfer*  
**Class:** ART 452: Capstone  
**Faculty Advisors:** Lynn Brinkman, MA, Erin Szavuly, MFA

I have chosen to look intently into Gustav Klimt and his effect on the art world. Discussion will include a brief history of his birth and origin, his art and methods, and why he chose the styles and materials he did. Why was his art so risqué at the time? I will look at society at the time and its impact on Klimt. Topics to be touched on include Klimt's patrons, his collaborations and the array of works he helped to create. Who were his influences, who did he influence? Why did he focus so much on the female form and women in general? Did the impending war play any role in his work, and how did it evolve over time? I will focus on just a few pieces in depth, while also briefly discussing others and their origin. I will conclude with Klimt's role in society today and what, if any, influence he may still have on others in these modern times.



**Title:** **Connecting Cultures through Close Reading:  
Literary Performance and the Logic of  
Accountability**

**Author:** *Veronica Lark*

**Class:** ENG 490: Senior Research

**Faculty Advisor:** Susan Shelangoskie, PhD

The history of oral performance in the Icelandic Saga and the Anglo-Saxon literary culture has led me to examine the context and event of oral performance within traditional texts. With Egil's Saga and Beowulf as my case studies, I deconstruct the contexts for oral performance traditionally bounded by a focus on generic structures. Through evidence of close reading, I will isolate moments of oral performance created by characters and narrators, and use oral performance to demonstrate the themes of heroism, authority, and accountability.

My analysis of these themes will lead toward an understanding of the logic of accountability created between textual hero and the authority structures. These themes overlap across cultures and evolve through performance. Collectively, the act of performance defines the relative meaning and cultural value of these literary themes. Performance becomes a point of comparison across different cultures and a means of creating and challenging authority structures. The outcomes of these literary performances have implications that employ and elevate literary themes to larger cultural significance and deeper historical interpretation.



**Title:** **The Impact of Plastination on the Future Education of Medical Professionals**

**Author:** *Taylor Maley*

**Class:** BIO 490: Capstone

**Faculty Advisors:** Anjali Gray, PhD, Sr. Barbara Stallman, PhD, Carolos Baptista, PhD (Univ. of Toledo)

The importance of finding ways to educate future healthcare professionals on the anatomical make up of humans is a distinct and evolving effort. The aim of this study is to explore the significance of plastinated specimens in the teaching human anatomy to healthcare professionals. Plastination is a process that involves the removal of water and insertion of plastics such as epoxy, polyester resin, or silicone in cadaver bodies, organs, and tissues in order to ensure that the specimen does not decompose. The importance of research in this area is contained in the perfection and efficiency of preparing specimens. Plastinated specimens contain the ability to preserve pathological abnormalities that can be used to educate medical professionals for a longer length of time compared to traditional formaldehyde preserved samples. The future of education and the plastination process has faced many ethical dilemmas. However, the positive impact of plastination to a medical student is of a great, immeasurable value.



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**Title:** **Private Food Services in Middle Schools**  
**Author:** *Carolyn Manley*  
**Class:** SWK 413 - Practice Oriented Research  
**Faculty Advisor:** Terry Keller, MSW

The proposed research topic will be on privatized food services in middle schools. The subjects in the sample will be staff and administration, parents and students. The impact private food services have on the number of intangible duties performed is the focus. An intangible duty is something not included in the official duties the employee is being paid for. An example of an intangible duty is suggesting healthy food choices to students or developing comradery with the students. In order to collect data from the subjects first the researcher does a preliminary questionnaire with the selected schools to find out if they use private food services or not. Schools that do not use private food services and schools that do use private food services will both be included in the data to show both sides of the spectrum. Then a survey will be put together to collect data from each group. The results will compare the satisfaction or dissatisfaction of each group and as a whole.



**Title:** **Competitive Interactions of Garlic Mustard (*Alliaria petiolata*) and Black Velvet Petunia (*Petunia hybridia*)**

**Author:** *Kevin Nemer*

**Class:** BIO 490: Capstone

**Faculty Advisor:** James Chamberlain, MA, Robin Ford Parker, BS

This project will explore the competitive interactions between the native annual flower *Petunia hybridia* and nonnative invasive species *Alliaria petiolata* (garlic mustard). The beneficial symbiotic relationship between mycorrhizal fungi and *Petunia hybridia* root systems can be inhibited by the production of allelochemicals produced by garlic mustard. This interaction can limit nutrient intake by *Petunia hybridia* restricting growth and often resulting in death (Poon & Maherali, 2015). Survival of *Petunia hybridia* however would indicate interspecific competition is not great enough to cause mortality. Higher rates of garlic mustard mortality would indicate that interspecific competition presented by *Petunia hybridia* is greater than that of garlic mustard and or intraspecific competition between garlic mustard negatively affected garlic mustard (Leicht-Young, 2012). Studies of problematic invasive species are important in order to find solutions to better control their spread and growth, especially garlic mustard because invasion is common throughout North America and it is outcompeting many native herbaceous species (Leicht-Young, 2012).



**Title:**                    **Effects of Doll Therapy on Individuals with Dementia Who Have a History of Emotional Distress**

**Author:**                *Jessica Oley, Maritza Quinones*

**Class:**                    SWK 413: Practice Oriented Research

**Faculty Advisor:**    Terry Keller, MSW

This is a research proposal to explore in depth the research question, “What is the impact of presenting a therapy doll to individuals with Dementia with a history of emotional distress?” The project will focus on behaviors demonstrated two weeks prior to the use of a therapy doll, and then two weeks with the use of the therapy doll. The data source that will be used in this research will be individuals with Dementia at a skilled nursing facility. The variables that will be used to support the data will be the therapy doll, individuals with dementia and a list of 29 behaviors as used on the Cohen-Mansfield Agitation Inventory (CMAI). This tool is used to record common behaviors of agitation and distress among individuals with Dementia. This tool incorporates a Likert type scale that displays frequency of behaviors. The goal of the research is to see if there is any correlation with therapy doll and decreased behaviors of agitation over time.



**Title:** **Investigating Indoor Air Contaminants**  
**Author:** *Sara Ondrus*  
**Class:** BIO 490: Capstone  
**Faculty Advisor:** James Chamberlain, MA, Sr. Rosine Sobczak, MS,  
Elaine Ault, BS

The purpose of this study is to identify and analyze possible microbial contaminants present in indoor air and to determine if there is a relationship between their distribution, and the forced air ventilation system in REH Hall. For the first phase of analysis, air will be sampled using a Science Source High Volume Air Sampler in the two end classrooms on the first and second floor. The filters from the samples taken from each room will be pressed on tryptic soy agar (replica plating), which will then be incubated in the dark at room temperature to cultivate the trapped microbes. Each plate will be analyzed by transferring the microbes from the agar to a microscope slide and then performing a Gram stain. The second analysis will be completed by using an open plate method in each of the same classrooms. The same steps will be taken to examine any contaminants or pathogenic bacteria present. A literature review will also be conducted to determine the potential effects of poor indoor air quality on human health.



**Title:** **The Effects of Activated Carbon on the Presence of Cyanobacteria and Cyanotoxins**

**Author:** *Brandon Oneail*

**Class:** BIO 490: Capstone

**Faculty Advisor:** James Chamberlain, MA, Sr. Rosine Sobczak, MS, Sr. Barbara Stallman, PhD

Cyanobacteria, also known as blue-green algae, is a type of photosynthetic prokaryote that often causes harmful algal blooms in bodies of water. The toxins produced by the cyanobacteria are called cyanotoxins, which can cause a variety of health complications, including neurological disorders. The effects of activated carbon on the presence and toxicity of cyanobacteria will be observed. Water containing certain genera of cyanobacteria, such as *Microcystis*, *Lyngbya*, *Oscillatoria*, and *Anabaena* were run through a filter containing activated carbon (charcoal) to see how effective the activated carbon would be at eliminating the cyanobacteria. Tests to quantify the presence of cyanobacteria, and tests to quantify the toxins that are produced will be run. Cyanobacteria do not release its toxins until the cell wall bursts, meaning that the combination of the reduction of the presence of intact cyanobacteria, as well as the reduction of the amount of cyanotoxins present will be the criteria for determining how effective activated carbon is in altering the presence of said bacteria and its toxins. It is expected that both the presence of the cyanobacteria and cyanotoxin will be diminished during this experiment.



**Title:** **The Detection of Antimicrobial Agents in the Bark of Local Tree Species**

**Author:** *Lauren Pelton*

**Class:** BIO 490: Capstone

**Faculty Advisor:** James Chamberlain, MA, Sr. Rosine Sobczak, MS

Antimicrobial agents are the essence of this study because they can kill or inhibit the growth of microorganisms that can be harmful. These agents are found in many areas of the natural world, including various species of bacteria found in association with soil and plants. However, tree bark has yet to be fully explored. In this study bacterium cultures of *Micrococcus luteus* and *Escherichia coli* are plated on Tryptic Soy Agar and four filter paper discs, coated with tree bark dust or bark extract will be placed on the plates. The plates are incubated at 37 degrees Celsius for 24 hours and then observed to calculate a zone of inhibition. Results indicate that zones of inhibition occurred on plates with each bacterial species, but the tree bark itself seems to have a more potent antimicrobial properties than the associated bacteria.



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**Title:** **The Effects of Triclosan in Aquatic Environments on the Evolution of Anti-Bacterial Resistant Genes in *Escherichia coli***

**Author:** *Noah Roper*

**Class:** BIO 490: Capstone

**Faculty Advisor:** Anjali Gray, PhD, James Chamberlain, MA, Elizabeth Wise, PhD

The purpose of this research experiment is to determine if the levels of Triclosan found in aquatic environments such as Lake Erie have any effect on the evolution of anti-bacterial resistance genes in *E. coli*. Triclosan is an anti-bacterial agent found in many anti-bacterial products such as hand soap. Anti-bacterial agents such as Triclosan, are continually released with waste water into aquatic environments which makes them the largest contributor to the development of anti-bacterial resistance genes.

To determine the levels of Triclosan in a natural water sample, a series of standard Triclosan concentrations must be made from its stock solution. By converting these solutions of varying concentrations to an azo-dye form, the absorbance can be determined using UV-Vis spectrophotometry. These absorbance values can then be graphed to determine the slope of the line and used with the absorbance value of the water sample to determine the concentration of Triclosan present in aquatic environments. The *E. coli* cells will then be exposed to solutions containing 2.00mg/L, 6.37mg/L, 15.00mg/L and 30.00mg/L concentrations of Triclosan over successive generations through Kmirby Bauer testing.



**Title:** **Why Do They Stay? An Exploration of Female Domestic Violence Victims' Reasons for Remaining in an Abusive Relationship**

**Author:** *Kevin Swaney*

**Class:** SWK 413: Practice Oriented Research

**Faculty Advisor:** Terry Keller, MSW

When female victims of domestic violence choose to remain in an abusive relationship, the continued abuse strains societal resources, especially those of law enforcement, the courts, and health care systems. That abuse causes physical, mental, and emotional harm to the victim, to the family of the victim, and to any children of the victim, if they exist. The reasoning behind the decisions of female victims of domestic violence to remain in an abusive relationship is poorly understood. This research will, through semi-structured interviews of female victims of domestic violence, determine common themes in their decision making processes. Developing a better understanding of this reasoning will enable development of appropriate interventions that will help to reduce physical, mental, and emotional harm to the victim and her family as well as reduce the negative effects of this abuse on society and its resources.



**Title:** **Indigenous Yeast vs. Cultured Yeast in California Winemaking**

**Author:** *Andrew Thomas*

**Class:** BIO 490: Capstone

**Faculty Advisor:** Anjali Gray, PhD, Sr. Rosine Sobczak, MS

Yeast converts the sugars of wine grapes into alcohol and carbon dioxide through the process of fermentation. The more sugars in the grapes, the higher the potential alcohol level of the wine if the yeast are allowed to carry out fermentation. Winemakers can stop fermentation early to leave residual sugars and sweetness in the wine. A literature review was conducted on the importance and differences of indigenous yeast, or wild yeast that is in the surrounding air, on grape skins, and in soil, and cultured yeast, dried, inactive packaged yeast, and how they affect winemaking. It was found that wine flavor is affected by the different yeast strains and not just if it is indigenous or cultured, but also that cultured yeast is more consistent than indigenous.



**Title:** **The Effect of Nicotine and Diphenhydramine on Flatworm Regeneration**

**Author:** *Elijah Walters*

**Class:** BIO 490: Capstone

**Faculty Advisor:** James Chamberlain, MA, Chris Boudrie, MD, Debra Bercher, MEd

Planarians like *Dugesia dorotocephala* have been the standard for testing tissue regeneration since it was first discovered. Breakthroughs in tissue regeneration may help to alleviate shortages of transplant organs or aid in the generation of other human tissues. Chemical exposure can influence planarians ability to regenerate tissue. Nicotine and diphenhydramine HCl (Benadryl) are chemicals that are widely used among humans, and will be evaluated in this experiment. A non-toxic concentration of both nicotine and diphenhydramine HCl was first determined. The tails of the flatworms were then removed and placed into water (control), nicotine solution, diphenhydramine solution, and a combination of both. Their regeneration was analyzed every 3 days for a total of 15 days by determining each worm's stage of regeneration under a microscope. The planarians were placed in stages 0-3 of growth by taking microscopic images and comparing the tail regeneration to the stage classifications. Much of this work utilized the protocol developed by Collins (2007) who tested the effects of caffeine and ethanol on planarian regeneration. This is a continuation of that study using chemicals that have not previously been tested. The expected results are that nicotine will speed up regeneration and diphenhydramine HCl will slow regeneration.



**Title:** **Major Roles in Religiosity: Looking at College Majors, Sex and Age**

**Author:** *Jordan Westgate*

**Class:** PSY 490: Capstone

**Faculty Advisors:** Matthew Lancaster, PhD

Religion has been a part of the human race throughout history. There have been many religions developed in that time and still continue to grow and change. Sociologists have studied religion before psychologists and laid the foundation for the rest to follow. Psychologist now study religion extensively and try to better understand and conceptualize its meaning to individuals. Over 170 scales have been developed to try and measure religiosity and many more continue to be created. Research has found a noticeable decline in religion across the world. This study looks at a few possible variables that could be contributing to this decline. College major, sex and age are variables that can be studied. To measure the religiosity a modified version of the Santa Carla Strength of Religious Faith was used. Certain demographic questions were also asked to determine age, sex, college major and year in college. It is hypothesized that students with scientific majors will be less religious than those with non-science majors. In addition, it is expected that students further along in their science majors will be even less religious, while that will have no effect on non-science majors.



**Title:** **Periodontal Disease: A Cause of Heart Disease?**  
**Author:** *Payton Wojcinski*  
**Class:** BIO 490: Capstone  
**Faculty Advisors:** Anjali Gray, PhD, Judi Nath, PhD,  
Sr. Barbara Stallman, PhD

For almost three decades several studies have looked at the association between periodontal disease and cardiovascular disease. Not only is periodontitis a risk factor for heart disease, but the two diseases also share many risk factors. In many studies, the results showed that people with poor oral hygiene and health had a higher risk level of cardiovascular disease. These studies showed that there is an association between periodontal disease and heart disease, but it is unknown if there is a causation relationship or if it is a coincidence that two diseases happen at the same time. This literature review will analyze some of these studies in an effort to answer that question.



**Title:** **Applications of 3-D Bioprinting: Can It Be Successfully Used as an Alternative to Organ Donation?**

**Author:** *Jeremy Wood*

**Class:** BIO 490: Capstone

**Faculty Advisors:** James Chamberlain, MA, Christine Knaggs, PhD, Sr. Valerie Grondin, PhD

The waiting list for organ transplants has grown steadily in the past few decades to over 120,000 candidates in the United States alone (Bajaj, P., et.al. 2014). Nevertheless, heart disease, breast cancer, and kidney and liver failure are among the leading health issues in developed nations. The attempts to meet the demand for organs and various body tissues have directed biologist to the technology of 3-D printing in combination with regenerative medicine techniques. In 2013, doctors and scientist at the University of Michigan saved an infant's life by using 3-D bioprinting to produce a tracheal splint. Other scientists and surgeons have experienced similar success while fabricating different tissues for transplantation. This study will explore the fabrication process using the Da Vinci AiO printer to construct an ABS plastic model of a sheep's heart. To accurately fabricate the complex series of cavities, pathways, and valves of a heart, cross sections will be performed and scanned. Once scanning is complete, the images will be sent to a computer with software that will transcribe the information. Finally, the data will be sent back to the Da Vinci AiO for the printing process.



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