Pittsburg State University

Student Research Abstract Writings Spring 2019

Category **A**
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Sciences and Technology

Category **B**
Oral or Poster:
Business, Education and Humanities

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Colloquium

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Oral Presentations

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Creative Works

Student: Michael Anderson
Student: Status: Graduate
Major: Physics
Advisor: Dr. Rebecca Butler
Title: Vibrational States of Deuterated Nitric Acid
Time: 8:30-9:30

1

Abstract:
Deuterated nitric acid (DNO3) belongs to a family of molecules that interact with the ozone layer of the Earth. DNO3, and similar molecules, act as reservoir molecules which prevent the nitrate and hydrogen from interacting with and destroying the ozone (O3). To be able to model the ozone cycle, scientists need accurate measurements of how much of these molecules exist in our atmosphere. In order to do this, they need precise information about the spectrum of these molecules. Sometimes information on excited vibrational states is needed, not just the ground state, in order to utilize atmospheric "windows" (frequencies not blocked by water). Deuterated nitric acid microwave absorption spectral data was analyzed using a graphics program, IGOR, and fitting programs, SPFIT and SPCAT. Absorption frequencies were assigned to rotational quantum numbers in the 2?9 and ?6 vibrational states. The assignments were used to create a Hamiltonian. The two vibrational states were heavily perturbed, causing the need to use perturbation terms in the Hamiltonian.

Student: Michael Barnes
Student Status: Graduate
Major: Biology
Advisor: Dr. Andrew George
Title: Avian Response to Habitat Structure and Experimental Forest Management in Upland Hardwood Ecosystems
Time: 8:30-9:30

2

Abstract:
Forest bird populations in North America have declined since at least the 1960s. However, few studies have examined the long-term effects of forest management practices on bird population demographics. We analyzed the effects of vegetative structure and experimental forest management practices on densities of 11 bird species, using 14 years of monitoring data from 9 landscape-scale experimental forest plots in the Missouri Ozarks. Vegetative variables included basal area, stem density, and structural heterogeneity. Management variables included years since harvest and treatment type. Densities of Acadian Flycatcher, Black-and-white Warbler, Eastern Wood-pewee, Indigo Bunting, Ovenbird, and Worm-eating Warbler showed significant responses to a combination of vegetative and management effects. Densities of Kentucky Warbler and Yellow-breasted Chat showed significant responses to management effects alone. Conservation of bird populations in forested landscapes will require consideration of long-term, stand-level effects of forest management practices on specific species.

Student: Kali Boroughs
Student Status: Graduate
Major: Biology
Advisor: Dr. James Whitney
Title: Does Pollution Reduction Alter Longitudinal Richness Gradients of Stream Fishes? A Case Study in Cow Creek, Southeastern Kansas
Time: 8:30-9:30

3

Abstract:
Typically, downstream increases in stream size results in increasing fish species richness. However, when point (PS) and non-point (NPS) source pollution enters a flowing waterbody it can decrease fish species richness, altering longitudinal richness gradients. But, little is known concerning how longitudinal fish richness gradients respond to long-term changes in PS pollution. The objective of this study was to assess the response of fish species richness to PS pollution and its reduction along a longitudinal gradient of Cow Creek in southeastern Kansas. This was accomplished using previously collected data from a 1963 and 2017 surveys of fish communities across 15 sites. We used a generalized linear model (GLM) to examine the interactive effects of stream size (drainage area in km2) and year (1963 vs. 2017) on fish species richness in one stream that was heavily-impacted by PS pollution in 1963 but has since recovered and two streams which always had lower levels of PS pollution. We expected an increase in the y-intercept to occur in the relationship between stream size and species richness in the historically-polluted stream because of recovery of sensitive fishes, and no temporal changes in stream size-richness relationships in the two non-polluted streams. However, our predictions were not realized, as the polluted stream showed a significantly lower y-intercept in 2017 compared to 1963, indicating richness had decreased rather than increased. A possible explanation for this decrease in fish richness could be the ongoing and perhaps increasing severity of NPS pollution in this stream.

Student: David Hollie
Student Status: Graduate
Major: Biology
Advisor: Dr. Andrew George
Title: Bird Community Response to Experimental Forest Management in Upland Hardwood Forests
Time: 8:30-9:30

4

Abstract:
In recent decades, concern for migratory birds has stimulated research aimed at understanding the relationship between forest management and bird populations. We report on the long-term effects of silvicultural practices on bird community structure and composition in upland hardwood forests. Three silvicultural treatments (even-aged, uneven-aged, and no-harvest) were randomly assigned to three sites each (mean area = 400 ha) under a 100-year rotation with a 15-year re-entry period. Data on breeding bird densities were collected before and after two treatment applications (1996 and 2011). Bird communities diverged among treatments immediately post-harvest, but the differences in community composition and structure began to diminish by 8 years post-harvest. Species richness was higher in treated stands compared to no-harvest controls. Both species richness and diversity showed a linear decrease with year-since-harvest. Our findings demonstrate that even-aged and uneven-aged forest management can affect the bird community composition and structure within 3 years post-harvest, but differences may not be apparent by 12 years pots-harvest. To maintain a diverse bird community, we recommend harvesting every 7-10 years.

Student: Elena Olson
Student Status: Graduate
Major: Biology
Advisor: Dr. Anuradha Ghosh
Title: Characterization of bacterial isolates obtained from commercial poultry feed using whole genome sequence analysis
Time: 8:30-9:30

5

Abstract:
In order to reduce pathogen contamination in poultry products identification of overall microbial populations in poultry production processing steps have always been considered an important monitoring tool for assessing sanitizer effectiveness and the corresponding responses of bacteria load levels on poultry carcasses. Bacterial isolates recovered from corn-based chicken feed were purified on aerobic plate count agar and eleven were morphologically different colonies were selected for whole genome sequencing. The goal of the study was to: 1. Sequence, assemble and annotate the whole genome of these isolates, 2. Compare the protein profile among different strains of the same bacterial species. Whole genome sequencing was performed using Illumina MiSeq platform. Genome assembly was carried out on six sequences via SPADeS; quality was checked via Quast; and annotation was achieved via PROKKA. Although sequencing of genome for all eleven isolates were completed, till date, sequences of six isolates have been further processed for assembly and annotation. The isolates were identified as Kosakonia cowanii (2), Enterococcus gallinarum (1), Klebsiella variicola (2), and Pantoea vagans (1). The total %GC content of these bacteria ranged between 53 and 57; whole genome length was calculated as 4.8-5.7 X 106 bases; number of rRNA molecules were found to be 8-14; and total protein coding sequences were up to 5500. The data obtained from this study would help in identifying characteristics of a hygienic indicator organism in the poultry processing pipeline and thus reinforce application of WGS in food safety.

Student: Cody Parden
Student Status: Graduate
Major: Physics
Advisor: Dr. Serif Uran
Title: VO2 and V2O5 Oxide Phase Studies of Metal Insulator Transition
Time: 9:30-10:30

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Abstract:
Metal oxides that show metal-insulator phase transitions are used in oxide electronics. They also can be used in controlling amount of light intensity coming through windows allowing better temperature control in homes. In semiconducting phase light would transmit without much loss through the glass, but when the film becomes more metallic light would transmit less. However, finding a right metal-oxide that would exhibit an appropriate metal-insulator transition temperature has been challenging. Being able to tune the transition temperature is one of the aims of this study, where we concentrate on VO2, which should exhibit Magneli phase transition (VnO2n-1) and V2O5 which should not. About 300 nm of thin films of these materials were deposited on glass substrates under moderate vacuum levels (~10-6 Torr). The VO2 sample is studied before and after annealing as a function of temperature via UV-Vis-NIR spectrometer relative transmission and absorption. Distinct transmission and absorption data correlates and exhibit interesting phase changes. V2O5 sample will also be studied as a function of temperature and results will be compared.

Student: Vashishth Patel
Student Status: Graduate
Major: Mechanical Engineering Technology
Advisor: Mr. Ronny Galloway
Title: Silicone 3D Printing can improve prosthetic quality and profit margin: Problem Solving Research
Time: 9:30-10:30

7

Abstract:
I believe that three-dimensional (3D) printers have revolutionized the prosthetic industry. However, traditional 3D printed prosthetic parts are designed with hard plastics such as Acrylonitrile Butadiene Styrene (ABS) and Polylactic Acid (PLA), resulting in products that are uncomfortable to the customer and has few drawbacks in material properties such as durability, heat resistance, and strength. Therefore, the purpose of this problem solution research is to do an overall assessment of 3D printed prosthetic parts by evaluating the material properties, through determining the feasibility, and by conducting survey research. Consequently, we can compare these methodologies to traditional options and improve prosthetic comfort and find more durable and heat-resilient material. My foremost goal with regards to the above problems is to consider Silicone material as 3D printing filament instead of an ABS or PLA material. This will result in more comfortable, better vapor resistance, and higher durability for the prosthetics as compared to the traditional prosthetics. Keywords: Acrylonitrile Butadiene Styrene (ABS), Polylactic Acid (PLA), Silicone

Student: Nick Haynes
Student Status: Undergraduate
Presenting Group Members: Joshua Alstatt, Ayman Alsunayni, Trey Byrne, Adam Fogle, Devin Linn, and Mitchell Yeomans
Major: Mechanical Engineering Technology
Advisor: Dr. David Miller
Title: Live Well Pedal Power - Pedicab Transportation Project
Time: 9:30-10:30

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Abstract:
Live Well Crawford County along with Pittsburg State's Health, Human Performance, and Recreation (HHPR) have shown a need for a handicap accessible Pedicab. The team is building a wheelchair accessible Pedicab so that disabled and wheelchair bound individuals can participate in outdoor activities. This project was brought to Pittsburg State University's Engineering department by Dr. Laura Covert-Miller who is a co-chair of Live Well Age Well. The students met with Brad Stroud, also a member of Live Well, and Dr. Covert-Miller to inform the students of the needs and wants of the product. The students then spent last semester designing and running analyses of prototypes, which were shown to our faculty advisor, Dr. David Miller, and Dr. Covert-Miller and Mr. Stroud. After the students researched existing Pedicabs, they discovered that a Pedicab with wheelchair accessibility isn't on the market and this project will be one of a kind. This semester the students worked to manufacture a prototype of their final design from last semester using the engineering drawings that were drafted the previous semester. The students plan to deliver their project to their customers by the end of the semester, and can't wait to see the impact it has on other people's lives.

Student: Nathaniel Porter
Student Status: Undergraduate
Presenting Group Members: Chris Goff and Taylor Handly
Major: Mechanical Engineering Technology
Advisor: Mr. Patrick Foyet
Title: Component Testing Team
Time: 9:30-10:30

9

Abstract:
Shock testing and weight measurement The faculty identified a need earlier this year for senior capstone course teams to have more accurate information on the equipment they are using. The manufacturing labs contain spare parts left over from previous capstone classes, and little or no information provided on their material or structural properties. Specifically, there is a plethora of shock absorbers used both by NASA Rover teams and Baja teams that come from varying suppliers and manufacturers, and teams have no way of experimentally deriving the damping coefficient. There are also no easy methods provided for weighing rovers or Baja vehicles, both of which are highly important to the teams for the operation of their vehicle and for their grade. To meet these needs and to lay a foundation for future testing, we are first developing a fixture for a Zwick/ Roell Z050 universal test machine. This fixture will hold a shock absorber and use compression testing to process the distance and force into a table that can be used to calculate the appropriate spring constant (k) using the Hooke's Law equation. An Excel spreadsheet will convert the data provided by the Zwick software into a more easily readable format. For weight measurement, we are building a platform scale with a treated wood platform and a heavy duty scale base (generously donated by Cardinal Scale in Webb City, MO) that teams can use to determine the weight of their NASA Rover or Baja vehicles in both indoor and outdoor environments.

Student: Jake Wright
Student Status: Undergraduate
Major: Biology
Advisor: Dr. Andrew George
Title: Status and Population Trends of the Gray Bat Colony in Pittsburg, Kansas
Time: 9:30-10:30

10

Abstract:
The fungal disease, White Nose Syndrome (WNS), has been infecting millions of bats throughout North America, including the federally endangered gray bat (Myotis grisescens). This is the second year the gray bat colony in Pittsburg, KS has been closely monitored to determine the status and population trends. Monitoring was done by filming with an infrared video system three times a week at the two known emergence sites from April to November, 2018. From April to June, the gray bat population consisted of a maternity colony, with pups that were born in June. The average population size during this time period was 228 individuals. By late July, a drastic increase in numbers occurred as males and non-reproductive females joined the colony. The population peaked during the second week of September at 1,543 individuals, which was similar to the maximum population recorded in 2017. Throughout October a decline in the population resulted from bats migrating to hibernacula. Bats were no longer active by November. Population monitoring and WNS testing will continue in 2019.

Student: Chenae Newkirk
Student Status: Graduate
Presenting Group Members: Trevor Copenhaver and Humberto Granada-Ovelar
Major: Accounting
Advisor: Dr. Theresa Presley
Title: The Relationship of CEO Performance Based Compensation and Annual Company Performance
Time: 8:30-9:30

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Abstract:
The Chief Executive Officer (CEO) is an extremely influential member of a business organization. Not only are they usually the highest compensated employees, but as leaders, they are expected to have a significant impact in the decision-making process and performance of the company. Despite the importance of the role, there is very little research on the relationship of CEO compensation and annual performance measures. This paper analyzes the relationship between CEO compensation and annual performance measures including: Net Income, Other Comprehensive Income (OCI), and Total Comprehensive Income. After performing a regression and correlation analysis on 505 companies from the Standard & Poor's 500 List (as of February 6, 2019), our findings indicate an insignificant correlation between all annual performance measures and CEO's compensation. Instead, our findings point toward a compensation structure on target with contracting or market compensations. The consistency in pay among the sample shows a dissonance between the actual compensation received by CEOs and the company reports, which claim it to be based on the company's annual performance.

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Student: Sreerupa Sanyal
Student Status: Graduate
Major: Communication
Advisor: Dr. Joey Pogue
Title: Tone-based incivility and content-based incivility: A framework to examine online political uncivil discourse
Time: 8:30-9:30

Abstract:
This research study is an attempt to distinguish between two types of incivility; tone-based incivility and content-based incivility. Building upon and extending the theoretical framework proposed by Muddiman (Muddiman, 2017) on political incivility, this paper is an attempt to construct a two-dimensional framework within which online political incivility could be analyzed. This study is of significance as this year marks the 30th year of the internet. In a letter posted on his foundation's website, Tim Berners-Lee, the founder of world wide web, lamented the 'outraged, polarized tone and the quality of online discourse.' Currently online political incivility suffers from a lack coherent definition, therefore attempts to examine online uncivil discourse has been a challenge. By providing a two-dimensional framework, within which to examine online political incivility, this research study attempts to provide a concrete working definition of online political uncivil discourse.

Student: Griffin Williams
Student Status: Graduate
Major: Applied Behavior Analysis
Advisor: Dr. Ryan C. Speelman
Title: Equivalence-Based Instruction to Teach Single-Subject Designs in Higher Education
Time: 8:30-9:30

13

Abstract:
With increasing online courses and instruction, advanced methods to teach technical concepts are of value. Equivalence-based instruction allows students to gain a minimum competency prior to attending a lecture. This research involved developing a match-to-sample equivalence protocol that was embedded in CANVAS. Results show that these methods streamline the teaching of intricate concepts and the protocol may be shared across disciplines.

Student: Jordan Adams
Student Status: Undergraduate
Major: Economics
Advisor: Dr. Michael Davidsson
Title: Injury vs. Earnings
Time: 9:30-10:30

14

Abstract:
Major League Baseball generates billions of dollars annually as a professional sports league and operates as one of the leaders within the sports market. As with all other professional sports, the core investment of the MLB is to the athletes it employs. However, unlike in other sports the MLB places a particularly high investment on the arms of these athletes, more specifically their throwing arms. As these arm investments are being made, many variables are determined. One of the largest variables is an injury to the arm. In terms of injuries that require surgery, one of the most common in baseball is the rupturing of the ulnar collateral ligament in the elbow. The most common way to correct a ruptured UCL is by a procedure known as Tommy John surgery. Based on age, performance metrics, salary analysis, recovery time, and what doctor performed the operation, this study identifies the variables that impact salary gained/lost by MLB pitchers who have underwent Tommy John surgery. Using the OLS (Ordinary Least Square) method and descriptive data analysis, it was revealed that pitchers who have undergone Tommy John surgery return to play at a high rate and can perform at a rate consistent with career averages in comparison with controls. In conclusion, MLB teams should not discriminate against pitchers who have undergone the Tommy John procedure, and there should not be an average discrepancy in salary of pitchers who have had the procedure and those who have not.

Student: Trevor Bauman
Student Status: Undergraduate
Major: Finance and Economics
Advisor: Dr. Michael Davidsson
Title: Determinant of Housing Prices in the United States: Midwest and Western regions
Time: 9:30-10:30

15

Abstract:
The study of this paper is to obtain an understanding of the determinants of housing prices, in the United States of America and then look at if the Midwest and West regions are similarly effected by the same determinants as the United States. The purpose of the study is to see what can determine the price of a house, both in areas of Midwestern America, like Kansas, and to the coasts of Western America, like California. This would allow for a variation of houses to be featured, different lifestyles and different climates. The reason micropolitan areas were chosen were because the cities are expected to become larger metropolitan areas in the coming years. The study will take a look at different factors that could determine housing prices; these factors are unemployment, income, housing characteristics, population, population growth, crime rates, and distance to nearest city. The structure of the paper will start by first looking at the socioeconomic effects of the area and the home buyer's personal financial situation and then the paper will look at where the house is located and how it effects the structure of the house and finally examine the economy at large for the micropolitan areas. The study will be using the Object of Least Squares (OLS) in the study to obtain a model that will help depict which determinants used have the greatest effect on housing prices in the 2000s. The result is to see what factors effect the housing prices of the National United States and then to see if the same factors have the similar effect in smaller regions. .

Student: Braidon Beard
Student Status: Undergraduate
Major: Communication
Advisor: Dr. Donald Viney
Title: Faith in Post-Apocalyptic North American Society
Time: 10:30-11:30

16

Abstract:
Over 171,000 video games have been made since 1950. (MobyGames Stats, 2018) Given the diverse genres of video games, theorists attempt to underline the successful aspects of various games to highlight what was done well. In this report, an argument is made that the Fallout franchise perfectly captures life in post-apocalyptic America. Through examining how video games utilize players' understanding of real life, how elements of religious ideologies (and lack thereof) only add to the diversity of video game experiences, and how non-playable characters are brought to life through the formations of their own world views, it is argued that the franchise completely masters

Student: Quinten Denham
Student Status: Undergraduate
Major: Economics
Advisor: Dr. Michael Davidsson
Title: Determinants of franchise values in the NFL, MLB, and NBA
Time: 9:30-10:30

17

Abstract:
The NFL, MLB, and NBA, commonly referred to as the "big three," are the group of professional sports leagues that dominate the North American professional sports market. While the fans of these leagues are interested in the performance of their teams, the owners are interested in the bottom line, the profits they make from their team and the overall value of their franchise. The goal of every owner is to increase the value of their franchise. The purpose of this study is to determine which factors have the biggest effect on the value of a professional sports franchise in the North American big three. This study will run an ordinary least squares linear regression to find the impact that certain variables have on the value of a franchise. The variables that will be studied include the size of the market a franchise plays in, age of the franchise, win percentage from previous seasons, the number of teams in the franchise's main market, the number of times the franchise has been sold, and the number of times the franchise has moved cities. This study will help sports franchise owners in their decision making processes and will also create a model for identifying greater and lesser profitability.

Student: Kyle Frank
Student Status: Undergraduate
Major: Economics and Finance
Advisor: Dr. Michael Davidsson
Title: Factors Affecting Students' Grade Point Average at Pittsburg State University
Time: 9:30-10:30

18

Abstract:
From the moment a person enters the education system, teachers, parents, and other instructors provide constant reminders about the importance of effective study habits. In this same dialogue, conversations about extracurricular involvement and other external activities manifest; these exchanges are often centered around creating habits which are conducive to learning. In order to understand the efficacy of these conversations, this paper assesses the factors affecting the grade point average of students at Pittsburg State University based on data collected from students attending PSU in the Spring of 2019. Students surveyed were asked a series of questions pertaining to their habits while attending college, and the most critical questions were centered around students' study habits, alcohol consumption, and extracurricular involvement. Understanding what contributes to the success of students, as measured by grade point average, is critical to assisting students in developing habits conducive to improving their performance. Furthermore, analyzing the contributing factors associated with students' GPA at PSU will assist in the development of programs and initiatives required to promote positive performance while attending Pittsburg State University.

Student: Riley Gordon
Student Status: Undergraduate
Major: Elementary Education K-12
Advisor: Dr. Marcus Daczewitz
Title: School to Prison Pipeline
Time: 10:30-11:30

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Abstract:
School to prison pipeline refers to a phenomenon in which marginalized and at-risk students experience increasingly harsh punishments and decreasing academic success out of proportion to their share of the population. Unfortunately, disciplinary processes within schools can cause marginalized and at-risk students to have an unwarranted interaction with the justice system. This interaction with the justice system can lead to significant adverse for the rest of their lives. With investigations demonstrating this inequity, there should be no misconception of this striking phenomenon of injustice happening within our nation's schools. Because of this, the purpose of this research is to bring awareness of this phenomenon to future teachers. The focus of this project surrounds the school to prison pipeline phenomenon and explores how it is manifesting and why it is manifesting within our nation's public school system. In the project's conclusion is an evidence-based guide providing elementary teachers strategies that will help them diminish the possibility of mistreatment towards their minority students.

Student: Kai Miller
Student Status: Undergraduate
Major: Economics
Advisor: Dr. Michael Davidsson
Title: Declining Fertility Rate in the U.S.
Time: 9:30-10:30

20

Abstract:
Fertility rate is the average number of babies a woman will have in her lifetime. In the United States, fertility rates have decreased significantly. In 1960 the fertility rate was 3.654 (3,654 births per 1,000 women). In 2017 the rate has dropped to 1.765. That means that the U.S. fertility rate is 16% below the replacement rate, 2.1, which is the rate the U.S. needs to replace the country's population over time without immigration. There are many factors and variables that are encouraging the decline of the U.S. fertility rate. In my study, I have researched and tested these variables to see if they share a relationship with the U.S. fertility rates using the Ordinary Least Square (OLS) method. From the results of my tests we will also be able to see the significance of the variables and how much of an impact the variables have on the declining fertility rate.

Student: Alexander Riley
Student Status: Undergraduate
Major: English Education
Advisor: Dr. Phillip Rudd
Title: Sentence Analysis of William Faulkner's The Sound and the Fury
Time: 10:30-11:30

21

Abstract:
The formal study of literature oftentimes necessitates more advanced methods of dissecting the diction and sentence formation of authors; advanced methods typically inaccessible to students in lower-level undergraduate courses, such as English Grammar and Usage (ENGL*202), who otherwise would endeavor to join the investigation. Specifically, this study seeks to understand the writing style of acclaimed American author William Faulkner in his novel The Sound and the Fury through careful examination of the sentence structure and deep structures employed by Faulkner in this American classic in terms of the number of kernel sentences. In this paper, a new style analysis more accessible to lower level English students is introduced. This technique utilizes traditional sentence diagramming (or the Reed-Kellogg system) to provide a visual representation of an author's writing, a superior method for visualizing the particular writing style of a writer. The findings show that William Faulkner mainly used compound-complex, declarative sentences of all tenses using active voice.

Student: Long Xiao
Student Status: Undergraduate
Major: Political Science
Advisor: Dr. Gary Wilson
Title: What Changes Political Knowledge? The Effects of Political Affiliation on Political Knowledge and the Usage of Mass Media
Time: 10:30-11:30

22

Abstract:
This 2-phase study (Still in progress), utilizes a survey to explore the connection between party identification and sources of political news, and how such factors affect individual political awareness and individual degrees of knowledge. This study also examines the correlation between the amount of media coverage of political issues and people's awareness of them. For each phase of the study, surveys are being administered to nearly 210 Pittsburg State University (Kansas) students, mostly freshmen and sophomores, who are in various majors. According to the preliminary findings, those who identify themselves as conservative politically generally have a lower degree of political awareness than those who identify themselves as liberal. Two methods of data analysis, Chi-square and ANOVA, are being utilized to test the statistical significance of the findings. The findings from the two data analyses suggest that the two extreme sides of the political spectrum account for the most statistical significance.

Student: Brooke Wells-Lee
Student Status: Graduate
Contributing Group Members: Heather Burger, Alaina Purdon, Peyton Quick, and Sierra Reinhart
Major: Sports Management
Advisor: Dr. Janice Jewett
Title: Grant Process Culminating In Dance Workshops
Time: 10:30-12:00

23

Abstract:
The dance performance and production class during the fall of 2018 got real life experience in applying for grants. The class was successful as it received the Project Incentive Grant from the Kansas Association of Health, Physical Education, Recreation, and Dance (KAPHERD). The students brainstormed ideas for a successful dance workshop and discussed the budget, venue, and other programming considerations for the event.

Student: Kylee Crook
Presenting Group Member: Cassandra Roque
Student Status: Undergraduate
Major: Communication
Advisor: Dr. Joey Pogue
Title: From Men to Women
Time: 10:30-12:00

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Abstract:
Society has created this idea that men are to blame for corruption, but women are too weak and fragile to be leaders. With this idea in mind, Authentic Love created a video called From Women to Men. This video involved interview style segments of women apologizing to men for the stereotypes and accusations we as women have created. As a response, my partner (Cassandra Roque) and I (Kylee Crook) are partnering with a Gender Studies, Interpersonal, and Small Group communication professor, Joey Pogue, to create another response. We want to create a video that is an apology to women for the assumptions and misconceptions men have created. We will interview men expressing their feelings on the subject at hand and apologize for the ideas the masculine society have created as well. We want to make it clear that we, as we are women, do not want to blame men, but show that we can work together with equal accountability and prove the stereotypes of women are incorrect and that men can express their feelings and opinions without fear of judgment and ridicule. We want to express that we believe that both men and women, should live together without stereotypes, judgment, and fear. We want to prove that we are all equal. The biggest thing we hope to achieve is to show that no one gender is to blame, but should take equal accountability for their own actions.

Student: Audrey Dainty
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Rion Huffman
Title: Simultaneous Color Contrast: Sensitivity of Visual Perception Between Two Focus Groups
Time: 10:30-12:00

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Abstract:
Simultaneous color contrast is a visual phenomena that causes difficulty for designers on a daily basis. The problems stem from one color appearing to be brighter or darker when surrounded by varied colors. This can have a negative (or positive) impact on design. After an initial study of simultaneous color contrast has been completed, researching the sensitivity of perception of said phenomena will be conducted using two focus groups: design students and non-design students. These two groups will view examples of simultaneous color contrast under proper lighting conditions and the results will be compared in order to determine whether or not there is a difference between the perception of design and non-design students. This presentation will outline this comparative study into simultaneous color contrast.

Student: Baylee Forcum
Student Status: Undergraduate
Major: English
Advisor: Ms. Lori Martin
Title: Inherent: a Novel
Time: 10:30-12:00

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Abstract:
An Excerpt from 'Inherent' Celia left Molly to browse the shop while she packaged the three paintings of "The Phoenix." Alone, Celia's thunderstorm eyes clouded as she covered the art. Though she admired Molly's determination to make a healing home for her father-in-law, conviction made her bones ache in their flesh housing. Celia knew the need for healing. She scrawled the title of the painting onto a small hand-pressed card and added, "When faced with the impossible, the Phoenix continued to rise." Gifts in hand, Molly thanked her again, and left. Celia stood for a long time in front of the empty gaps in the gallery where Molly's three canvases used to live. She pondered then at the wooden displays of crystal jewelry below them. The carefully curated pieces had been picked through, central elements of the design now missing. Celia would have to fill in the gaps; bring the disjointed display back to an enticing vision. But Celia didn't want to simply push the pieces back together. So she decomposed the controlled design. Where before, vivid watercolors hung above crystal jewelry, bright gems now perched below neutral paintings. Muted jewelry pieces moved in next to bright, expressionistic canvases, and handmade journals hosted dishes of glittering raw earth stones on their lawns. Plants from the back garden now hung from the ceiling, and near every point of entry. When she finished, Celia stood in awe of her beloved shop, now made almost completely new.

Student: Alex Gourley
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Rion Huffman
Title: Creating Transparent Product Photography with Liquid Elements
Time: 10:30-12:00

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Abstract:
In my presentation I will discuss my research into product photography in which photographs of transparent products are combined with various liquid elements. I will cover the process that goes into capturing transparent product photographs, the process that goes into capturing the liquid elements, the editing that goes into combining the two, and finally the difficulties associated with the process.

Student: Joshua Kukowski
Student Status: Undergraduate
Major: Art
Advisor: Ms. S. Portico Bowman
Title: Creation of a Quilted Portrait
Time: 10:30-12:00

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Abstract:
The subject of my oral presentation is an artwork I created. This 5 foot by 7 foot portrait is made using fabric and hand sewing techniques. I created this work in December of 2018. I had no major plans for the Christmas break, and I needed something to occupy my mind. The sketching and planning of my portrait started in mid-November. During this time, I did research on how to best construct and create the piece. When December arrived, I had a to scale print out of the portrait to use as a template. I then acquired the materials needed for the portrait and began working. The construction of the portrait took many hours and had many steps. The process involved cutting and folding the fabric to the desired shape. And then layering it in an order that created the desired image. Most of the portrait involved the use of hand sewing techniques.

Student: Skyler Worley
Student Status: Undergraduate
Major: Psychology
Advisor: Ms. Lori Martin
Title: The Soldier's Funeral
Time: 10:30-12:00

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Abstract:
The Soldier's Funeral is a story inspired by the Emerson Lake and Palmer song, "Lucky Man", and is told from the perspective of the fictitious "John Doughty" who is attending his best friend's funeral on leave and is considering abandoning his military career to leave the country for Canada. While at the funeral, John cannot shake the feeling that his friend has become part of a larger narrative geared towards recruiting young men into a war that neither he nor his friend had faith in. Indignant at the treatment of his friend's funeral as such, John speaks to the crowd about the reality of his friend's death and encourages them to "call it what it is." He then leaves the church with a determination to continue his own service so that other young men can avoid having to experience what he has first-hand. The purpose of the story and its narrator's conclusion is to convey a sense of duty—not for a country, but for a community, which drives people to participate in battles which they might otherwise avoid and to illustrate the common occurrence of people who die in wars being martyrized without concern for how they themselves might feel about their legacy. To tell the story I used a first-person narrative with dark religious and moral undertones told in a midwestern dialect which complimented the setting of a mid 1960's rural America still certain of its role on the world stage and patriotically embroiled in the Vietnam conflict.

Poster Presentations

Category

Sciences and Technology

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Business, Education and Humanities

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Creative Works

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Topical Literature Review

Category

High School

Student: Stormy Carter
Student Status: Graduate
Major: Nursing
Advisor: Dr. Ashleigh Heter
Title: A Pre and Post Survey to Evaluate Patient Perception of Group Diabetes Self-Management Education in Rural Health Clinics

30

Abstract:
Diabetes is a significant clinical issue in the primary care setting. Providers struggle to overcome barriers to facilitate therapeutic interventions for populations served. The specific aim of this study was to assess group diabetes self-management education from a patient perspective. Evaluation of diabetes knowledge and self-efficacy confidence was conducted in rural primary care clinics using pre and post surveys. This study utilized a one-group pretest-posttest design to patients receiving group diabetes self-management education in Southeast Kansas rural primary care clinics by a certified diabetes educator. The surveyed population included individual's ages 18-65 with prediabetes, type I, or type II diabetes who received education led by a certified diabetic educator between December 1, 2018, and February 28, 2019, at five rural primary care clinics in Southeast Kansas.

Student: Ashleigh Elbert
Student Status: Graduate
Presenting Group Member: Mallory Gibson
Major: Biology
Advisor: Dr. Virginia Rider
Title: Maternal Immunity: Preimplantation Preparation

31

Abstract:
Activation of the T cell homing receptor, CCR7, regulates multiple aspects of adaptive immunity. Deletion of CCR7 reduced T regulatory cell (Treg) migration into the uterus and decreased embryo implantation. We hypothesized that the CCR7 ligands, CCL19 and CCL21, attract Treg cells into the uterus and provide local immune suppression prior to implantation. Sprague-Dawley rat uteri were isolated from pregnant rats (Days 3-6, implantation Day 5) and RNA was isolated. Spatial distribution of the ligands was assessed using immunocytochemistry and ligand expression quantified by real time PCR. At Day 3 of pregnancy, CCL21 expression was limited to the glandular epithelium. Expression appeared in the antimesometrial uterine stroma at Day 4. Expression of CCL21 peaked at Day 4 of pregnancy (Mann Whitney, $p < 0.05$). The distribution of CCL21 was similar between Days 4 and 5 but was less robust at Day 5. CCL21 expression was lost from the glands at Day 6 but maintained in the antimesometrial stroma. CCL19 was expressed in the luminal and glandular epithelia of ovariectomized rat uteri. Progesterone pretreatment (2 mg daily, 3 days) stimulated expression of CCL19 in the periluminal stroma. Estradiol (0.2 µg) administration to progesterone-pretreated rats increased the expression but not the distribution of CCL19. CCL19 and CCL21 were hormonally controlled in a rat uterine stromal cell line. Unlike the constitutive expression of these ligands in lymphoid tissue, female sex steroids regulate uterine CCL19 and CCL21. An intrinsic program of immune-mediated events appears to operate in the mammalian uterus prior to implantation.

Student: Hamidreza Givehchi
Student Status: Graduate
Contributing Group Members: Haley Denton and Kevin McNay
Major: Polymer Chemistry
Advisor: Dr. Jeanne H. Norton
Title: Creating a Method to Quantify and Characterize the Reinforcing Properties of Silica Fillers

32

Abstract:
Polysiloxanes are known as temperature-resistant material with the ability to maintain flexibility at low temperature. Their chemical properties make them suitable for different applications including gaskets, sealants, coatings, and adhesives. However, polysiloxane elastomers generally exhibit poor mechanical properties and have no practical use unless reinforced in some way. The elastomers can be mechanically improved through the use of reinforcing fillers. This study calculates the concentration of silanol groups on the surface of silica fillers and investigates the effects of silanol concentration on the rheological properties of silica-filled polysiloxanes in order to predict the reinforcing capabilities of each filler.

Student: Amy Hammesfahr
Student Status: Graduate
Major: Biology
Advisors: Dr. Christine Brodsky and Dr. Kathryn Womack
Title: Habitat Ecology, Species Occupancy, and Public Perception of Three Declining Bat Species in Southeastern Missouri

33

Abstract:
The populations of three bat species, the Northern long-eared bat (Myotis septentrionalis), tricolored bat (Perimyotis subflavus), and little brown bat (Myotis lucifugus), have declined in southeastern Missouri since the introduction of white-nose syndrome (WNS) in 2012. The current maternity habitat of the remaining populations in the counties of Shannon, Carter, and Reynolds are unknown. In order to provide protection and conservation for the species, it is critical that their maternity roosts be identified. To achieve these goals, we will incorporate bat survey tools such as acoustic surveys, acoustic lures, and mist netting within the three counties to determine species occupancy and roost locations. During our pilot season in 2018, we were unable to capture our target species but acoustically recorded likely P. subflavus echolocation calls. The next two summers of research will occur within the same counties but include a larger survey area. Beginning in 2019, we will assess the perceived attitudes of bats based on the results of a survey given to local citizens within the study areas to bolster bat conservation and education.

Student: Andrea Hight
Student Status: Graduate
Major: Doctor of Nursing Practice
Advisor: Dr. Kristi Frisbee

34

Title: Increasing Providers' Intent to Perform E-cigarette Screening in the Adolescent Population

Abstract:
Although originally marketed as a smoking cessation device, e-cigarettes have been increasingly used among youth. A staggering 967% increase in use was seen between 2011 and 2015. It is estimated that currently more than 10 million youth, ages 12-17, have used e-cigarettes or are open to trying them. The Food and Drug Administration recently made a statement purporting that e-cigarette use among youth had reached "epidemic proportions" in the United States. Research has repeatedly linked e-cigarette use to future traditional cigarette use. Additionally, research is mounting regarding the potential negative health effects of e-cigarette use such as, chronic lung disease, increased respiratory infections, nicotine addiction, and even cancer. Healthcare providers are uniquely positioned to halt this sharp incline through appropriate patient screening and effective patient education. Previous studies indicate healthcare providers do not regularly screen youth for e-cigarette use. These studies also indicate that the most significant barrier to e-cigarette screening, in the clinical practice setting, is lack of provider knowledge regarding e-cigarette safety. The purpose of the project was to increase providers' intent to screen adolescents for electronic cigarette (e-cigarette) use through the provision of an educational offering. The educational offering highlights the literature to date regarding e-cigarette safety. E-cigarette screening practices were measured before, after, and six-weeks following the educational offering. According to the findings, the educational offering increased providers' intent to perform e-cigarette screening in the adolescent population.

Student: Briana LaForge
Student Status: Graduate
Major: Doctor of Nursing Practice
Advisor: Dr. Janis Schiefelbein
35
Title: Autism screening knowledge and practice in Southeast Kansas

Abstract:
Autism spectrum disorder (ASD) is classified as a neurodevelopmental disorder characterized by delays in social communication and interaction as well as restricted repetitive behaviors, interest, and activities. According to the most recent reports from the CDC, it is estimated that 1 in 68 children are diagnosed with some form of ASD in the United States. Research has shown that early identification and intervention can significantly improve outcomes in those individuals diagnosed. As a result of this research, the American Academy of Pediatrics (AAP) has recommended routine screening on all children for ASD at the age of 18 months and again at 24 months using a standardized autism-specific tool. This descriptive research design examines the autism screening and referral practices of providers in the southeast Kansas counties of Montgomery, Allen, Labette, Cherokee and Crawford. A survey was used to collect data regarding current autism screening and referral practices, knowledge on autism screening guidelines and provider attitudes on routine autism screening. The preliminary results show that providers in southeast Kansas are aware of the AAP guidelines regarding screening and feel that screening every childhood for autism is important. However, these providers are not screening children for autism using an autism specific screening tool. Providers in this area had a strong desire to learn more about autism screening guidelines and specific autism screening tools. A conclusion can be drawn that providers in this area understand the importance of routine autism screening but more education targeting how to actually perform the screening is warranted.

Student: Xavier Martinez
Student Status: Graduate
Major: Chemistry
Advisor: Dr. Ram K. Gupta
Title: Electrocatalytic Properties of Lanthanum-based Perovskites for Water Splitting and Energy Storage Applications

36

Abstract:

Recent changes in global weather patterns have punctuated the need for mollification through a cleaner energy option. As part of the overall plan, hydrogen production for fuel cells offers substantial power without carbon emissions. Overall water splitting, with the aid of a low cost electrocatalyst could prove to be an abundant green fuel source. Utilizing readily available transition metals, three perovskite nanostructures were studied as a multifunctional material for hydrogen production as well as energy storage. LaCoO3 (LCO), LaFeO3 (LFO), and LaMnO3 (LMO) were synthesized and characterized by X-ray diffraction and then dip coated onto nickel foam as electrodes in a standard three electrode system. The electrochemical properties were analyzed with electrochemical impedance spectroscopy (EIS), line scan voltammetry (LSV), and cyclic voltammetry (CV) for its electro-catalytic activity towards both the hydrogen evolution reaction (HER) and the oxygen evolution reaction (OER) as well as its effectiveness as a supercapacitor. It was shown that electrocatalytic activity toward OER was highly dependent on the material composition. Accordingly, LFO had the lowest overpotential voltage of 316 mV at 10 mA/cm2 compared with 376 mV (LCO) and 419 mV (LMO). Toward HER, LMO showed overpotential voltage of 176 mV at 10 mA/cm2, while LCO and LFO showed 221 mV and 230 mV, respectively. Measured at a common current density of 0.5 A/g, the specific capacitance of LMO was 105 F/g over LCO (45 F/g) and LFO (35 F/g). Further investigation for fabrication of devices for energy storage and water splitting electrolyzer application has been considered.

Student: Abigail Morgan
Student Status: Graduate
Major: Biology
Advisor: Dr. Phillip Harries
Title: Optimization of a lead biosensor to test environmental samples in an in vitro and in vivo system

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Abstract:
Lead contamination of water and soil poses a serious health risks to humans. Gas chromatography and atomic absorption spectrometry are typically used to detect lead in environmental (water and soil) samples. These detection methods require costly equipment and expertise. Here, we outline plans to optimize a lead biosensor generated as part of the international genetically engineered machine (iGEM) program in order to facilitate development of a cheaper and easier lead detection method. We will be working with a biosensor within the bacteria Escherichia coli (E.coli) which will allow for detection of lead by adding a soil or water sample into a growing culture of bacterium, making it a cost-effective method that takes minimal training. The biosensor consists of a plasmid containing a constitutively expressed repressor protein which binds to the promoter/operator unit from the chromosomal lead operon of Cupriavidus metallidurans. If lead is present, it binds to and inactivates the repressor, allowing for transcription of green fluorescence protein (GFP). Initial tests indicate that the amount of fluorescence produced by the biosensor is similar for all lead concentrations however, we hope to fine tune the system to allow for dose dependent detection. We also plan to use the biosensor DNA to set up an in vitro cell free protein synthesis (CFPS) system for detection We will visualize our results through use of a UV lamp, flow cytometry, Western blotting, or fluorescence microscopy.

Student: Sneha Ramanujam
Student Status: Graduate
Major: Polymer Chemistry
Advisor: Dr. Ram K. Gupta
Title: One Step Synthesis of Novel Biobased Polyol for Highly Flame-Retardant Polyurethane Foams

38

Abstract:
A novel bio-based polyol was synthesized using corn oil as an alternative to petroleum-based polyol for the synthesis of polyurethane foams. The polyol was analyzed using wet chemical techniques to obtain hydroxyl number and viscosity of the polyol. The infrared spectroscopy and gel permeation chromatography were used to confirm the structural properties of the foams. Flame-retardant polyurethane foams were prepared by addition of different concentrations of dimethyl methyl phosphonate (DMMP) in the final foam composition. The effect of DMMP on the thermo-mechanical properties of the polyurethane foams was analyzed. The TGA analysis showed improved stability of the final char with the addition of DMMP in the foams. All the foams maintained a well-defined cellular structure and over 95% of closed cell content. The horizontal burning test showed reduced burning time and weight loss from 115 s and 38 wt% for the neat foams, to 3.5 s and 5.5 wt% for DMMP containing foams (1.94 wt% P). The combustion test using cone calorimeter showed a considerable reduction in heat release rate and total heat release. Thus, our study shows that corn-oil based polyol can be used to produce renewable polyol for industrially producible rigid polyurethane foams. An addition of a small amount of DMMP could result in a significant reduction in flame retardant properties of the polyurethane foams.

Student: Sammi Simpson
Student Status: Graduate
Major: Doctor of Nursing Practice
Advisor: Dr. Karen Johnson
Title: Usability and Acceptability of an Electronic Clinical Decision Support Tool for Antibiotic Selection for Common Pediatric Infections in Outpatient Rural Healthcare Clinics

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Abstract:
The purpose of this project was to determine the potential role of an electronic clinical decision support tool (ECDST) for optimizing antibiotic prescribing practices in rural clinical practice. The specific aim was to evaluate the usability and acceptability of an ECDST for antibiotic prescribing in pediatric patients in outpatient rural health clinics. The data was collected from providers working with pediatric patients at Community Health Center of Southeast Kansas. The ECDST used in this project was found to have a high usability value and was accepted as a potential tool for clinical practice by the majority of the providers who used it.

Student: Griffin Williams
Student Status: Graduate
Major: Applied Behavior Analysis
Advisor: Dr. Jamie Wood
Title: Medication Moderates Link Between ADHD and Some Intimate Partner Violence Measures

40

Abstract:
Intimate partner violence (IPV), is a significant public health concern involving physical or psychological threats from a current or former romantic partner. (Centers for Disease Control and Prevention [CDC], 2014). Previous investigations have revealed that nearly half of all women and men have suffered from psychological aggression by an intimate partner at some point (Black et al., 2011). While IPV affects both genders, females suffer more than five million IPV incidents each year and nearly two million injuries (National Center for Injury Prevention and Control, 2003). While many predictors have been linked to IPV, we focused on Attention-Deficit/Hyperactivity Disorder (ADHD) and related variables.

Student: Camila Zequine
Student Status: Graduate
Major: Polymer Chemistry
Advisors: Dr. Ram K. Gupta and Dr. Pawan K. Kahol
Title: Molybdenum Oxides for Energy Generation and Storage Using Efficient Clean Method

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Abstract:
To solve the growing energy issues, significant efforts have been focused on the search of earth-abundant elements that can provide multifunctional behavior for both energy generation and storage. Due to the low-cost and rich chemical nature, transition metal oxide nanostructures have been used in the fabrication of energy devices, such as fuel cells and lithium batteries. In this work, nickel, cobalt and iron molybdates were synthesized via a simple hydrothermal method in order to fabricate electrodes for oxygen evolution reaction (OER) and a supercapacitor. FeMoO4 required an overpotential of 294 mV to achieve a current density of 10 mA/cm2 for oxygen evolution reaction, which is lower than the overpotential required for NiMoO4 and CoMoO4 to do the same process. For the energy storage properties, the highest specific capacitance was achieved by FeMoO4 electrode (11.5 F/cm2 at a current density of 1 mA/cm2). Galvanostatic charge-discharge measurements were performed and showed a better discharge time for iron molybdate. The capacitance retention and coulombic efficiency exhibited excellent performance over 5,000 cycles. In conclusion, molybdates, mainly FeMoO4, could be a promising material for the advancement of energy generation and storage devices.

Student: Chen Zhao
Student Status: Graduate
Contributing Group Members: Sanket Bhoyate and Chunyang Zhang
Major: Polymer Chemistry
Advisors: Dr. Ram K. Gupta and Dr. Pawan K. Kahol
Title: Construction of high-performance 3D nanostructured flower-like iron-nickel sulfide for supercapacitor

42

Abstract:
The global energy crisis and environmental pollution have stimulated increasing attention to developing clean and renewable alternative energy sources. One of the most efficient and greenest energy storage devices is supercapacitor which could store energy via electrical double layer and redox reactions. Supercapacitors are widely employed for many portable electronics and hybrid electric vehicles due to their high power density, fast charge-discharge rate, and good cycle stability. In this work, 3D nanostructured flower-like iron-nickel sulfide was synthesized on the nickel foam using a facile hydrothermal method. The iron-nickel sulfide electrode showed outstanding performance for supercapacitor with a high areal capacitance of 13.2 F/cm2 at the scan rate of 1 mV/s and 4.9 F/cm2 at the current density of 5 mA/cm2, respectively. The specific capacitance of iron-nickel sulfide was 11 and 54 times higher than that of iron-nickel oxide and nickel foam at 5 mA/cm2, respectively. Furthermore, the iron-nickel sulfide electrode displayed good rate capability in the charge-discharge study. Our research suggests that designing a highly porous and 3D nano-flower like iron-nickel sulfide material could be a way to improve the charge storage capacity of energy storage devices.

Student: Enrico Aveiro
Student Status: Undergraduate
Major: Biology
Advisor: Dr. Mandy Peak Bryan
Title: Human Gut Microbiome

43

Abstract:
The human gut microbiome has been an area of interest for researchers due to its established link with human metabolism, nutrition, physiology, and immune functions. The research presented further investigate the microbiome to better understand it. Stools from two healthy young African males and a French obese individual were analyzed using MALDI-TOF MS and the enrichment culture technique. For the identification of bacterial species metagenomics, genomics, and culturomics were used. The results showed a much broader biodiversity in the human gut than previously predicted, as well as better results when using culturomics for measuring biodiversity in large-scale isolation. .

Student: Brandy Brouhard
Student Status: Undergraduate
Presenting Group Members: Jaclyn Adamson, Rachael Ashcraft, Bailey Bennett, Maggie Cannon, Talia Ayala Feliciangel, Meagan Fleming, Jenna Holt, Olivia Houston, Susan McAlexander, Katrina Poulsen, and Jessica Wright
Major: Psychology
Advisor: Dr. Bruce Warner
Title: Does Precuing a Target Location Narrow the Distribution of Attention?

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Abstract:
Whether the distribution of attention in the visual field declines from the focal point as monotonically decreasing gradient or as Mexican-hat-like distribution is still an open question, with some evidences supporting the former (e.g., Eriksen & Yeh, 1985) and other evidences supporting the latter (e. g., Müller, Mollenhauer, Rösler, & Kleinschmidt, 2005). Our research group presented experiments at Midwestern Psychological Association last year that examined the effects of perceptual load, cue-target stimulus-onset asynchrony (SOA), and set size on the distribution of attention. In the low-load condition, a strong quadratic trend was observed in the incompatible flanker RTs, yielding a large flanker effect for the smallest target-flanker separation, smaller effects at intermediate separations, and a recovery of flanker effects at the widest separation. With the high-load, a linear trend was observed, with flanker interference declining across distance from the target. The result of the low-load condition was compatible with accounts of a suppressive annulus around the focus of attention. The present poster extends the previously reported data set by introducing new data and a new analysis based upon extraction of local minima and maxima from each individual's flanker interference functions. From the perspective of the selective tuning model of Tsotsos et al. (1995), pre-cuing the target location should allow time for visual attention to focus more narrowly on the target location. Therefore, it should be expected that the distance, in degrees of visual angle, between the local maximum and local minimum of each flanker interference function should decrease with cue-target SOA.

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Student: Antara Das
Student Status: Undergraduate
Presenting Group Member: Marcus Allen
Major: Electronic Engineering Technology
Advisor: Mr. Clark Shaver
Title: Civilian Acquirer for Fire Safety

Abstract:
The department of Electronics Engineering Technology (EET) of Pittsburg State University has designed a prototype of an autonomous rover to help firefighters to find lives trapped in a building during an event of fire. The rover prototype has been named CAFS, which is the abbreviated form for Civilian Acquirer for Fire Safety. This device intends to produce the first ever autonomous system to locate, record, and transmit people's location from within a building to a user outside of the building. According to the National Fire Protection Association (NFPA), on 2017, 72% of the fire that happened in the USA was structural fire, which brought 77% civilian fire deaths that occurred inside a building. The U.S. Fire Statistics states that, fire deaths have increased by 9.6% from 2008 to 2017. People now needs a solution where the existing fire safety system is failing. Therefore, CAFS is under development. It is a motorized rover which follows a pre-programmed path and navigates through debris and obstructions using its on board sensors to detect and record the amount of people within a room and transmit the data out to a firefighter via wireless communication. Intended to be used during fire hazards, upon a successful build and design in future, this device has the potential to save many lives, including victims of a fire and firefighters alike

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Student: Lelan Delissa
Student Status: Undergraduate
Contributing Group Members: Marcus Allen, Dedrick Cooper, Alex Fries, Jonathan Harris, Steven Kirkland, Matt Krantz, Greg McCartney, and Zackary Westfall
Major: Electronic Engineering Technology
Advisor: Dr. Erik Mayer
Title: Kansas Solar Race

Abstract:
Under the leadership of Dr. Erik Mayer, Pittsburg State University hosted the first Kansas Solar Race Competition. The purpose of this competition is to motivate students to learn about different aspects of solar car technology. The competition motivates students by bringing multiple teams together in a friendly competition to test out their uniquely engineered and constructed wireless cars. The cars will compete in different competitions such as an agility competition and a drag race. After the competition, the students are able to learn from the ingenuity of other teams and spark a curiosity to continue to learn about solar car technology for the next year.

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Student: Levi DeWitt
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Rion Huffman
Title: Pixel Size's Effect Upon Perceived Photo-Resolution

Abstract:
A common misconception with cameras is that the resolution of the photo—or the surface area of the picture measured in pixels, often referred to as pixel count—is the most important factor determining the picture quality. One of the first things that an aspiring photographer learns when researching cameras are that pixel count is not a highly representative factor in determining the resolving power, or clarity, of a camera. If the pixel count determines the physical dimensions of a picture, how would a professional camera with a 12-megapixel resolution—which yields a photo with a surface area of roughly 12,000,000 pixels—take any better pictures than a cell phone camera which also has a 12-megapixel camera? The answer to this mystery lies in the size of the pixels. The physical size of each pixel determines how much information—and therefore detail—can be collected by each pixel. The pixel size corresponds with the standardized sizes of image sensors, a list of which will be detailed in the final report. In this study, I will explore the concept of pixel size's effect of photo resolution and clarity. I will take a series of photos with a variety of cameras ranging in image sensor size, and, more importantly, image sensor pixel size. The subject of each photo will be a standardized chart for testing photo quality. This project will determine to what extent pixel size affects the quality of a camera's image.

Student: Kylie Dominick
Student Status: Undergraduate
Major: Biology
Advisor: Dr. Anuradha Ghosh
Title: Ecology and prevalence of ticks and tick-borne bacterial pathogens in southeast Kansas

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Abstract:
Ticks transmit a wide variety of pathogens including viruses, bacteria, protozoa, and helminths to vertebrates. Their life cycle depends on blood meals from various hosts as well as on environmental conditions such as the temperature and habitat type. The goals of the present study were to assess the prevalence of various tick species and tick-borne bacterial pathogens in southeast Kansas and adjacent area. Ticks were collected during May-August in 2016 and 2017 from three types of tick habitats using the flag-drag method. Adults and nymphs were sexed and identified using taxonomic key and PCR. Selected bacterial species were also detected by PCR. Differences between tick species prevalence in woodland versus pasture land cover types were analyzed using Arc-GIS. Out of a total of 1678 ticks collected, the majority of ticks were identified as Dermacentor (50.3%) and Amblyomma (47.3%); very few (2.4%) Ixodes females and nymphs were also identified. For all the species, more females were found than males. While A. americanum were more frequently found in pasture (42.6%), D. variables and I. scapularis were found in woodland (68.6%) and (80.9%), respectively. The rate of detection in Amblyomma (total pooled isolation, n = 39) for Francisella tularensis was 2.56%, for Rickettsia rickettsii was 28.2% while the same in Dermacentor (n = 28) for F. tularensis was 3.57%, for R. rickettsii was 7.14%. The data obtained in this study would help in implementing comprehensive surveillance and management programs for ticks and tick-borne disease risk for humans and animals in this region.

Student: Caleb Durbin
Student Status: Undergraduate
Major: Biology
Advisor: Dr. Christine Brodsky
Title: Camera trap study of the mammal communities across an urbanization gradient

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Abstract:
Urbanization impacts mammal communities due to habitat removal, resource abundance distribution, and the introduction of exotic species. Other studies have found that wildlife species richness is greatest at intermediate urbanization, while abundance is greatest in cities. This study was done to explore the mammal community across an urban to rural gradient in Pittsburg. Using motion-sensor camera traps, we documented small mammal presence for 24 hours a day, finding patterns in mammal abundance, species richness, and community composition. Our hypothesis was that we will observe trends in mammal communities similar to other cities. Over six weeks, we placed two cameras in either a rural and semi-rural location, or an urban and semi-urban location, rotating their placement each week. We also recorded tracks and scat within the study location in a 15-minute survey. So far, we have collected data on six species over 42 trap nights. The urban environment had a much greater species abundance and richness than the rural locations. The urban mammal community was dominated by urban adaptor and exploiter species, such as the Virginia opossum (Didelphis virginiana) and house cat (Felis catus). There have been no mammal pictures captured at the rural, semi-rural, and semi-urban areas, possibly due to inclement weather. We are continuing to sample these locations. This study will help us determine the effects of urbanization on mammals and what steps we will need to take to improve urban biodiversity. antibiotic resistance traits.

Student: Patrick Hardy
Student Status: Undergraduate
Presenting Group Members: Cole Angermayer and Rhett Lokey
Major: Plastics Engineering Technology
Advisor: Dr. Jeanne H. Norton
Title: Extrusion Production of 3D Printer Filament for Additive Manufacturing

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Abstract:
Additive manufacturing, also known as 3D printing, is becoming a go-to production method for short production runs and rapid prototyping on a commercial scale. The growth of additive manufacturing is due to many factors including development of concept modeling, product designing, prototyping, and customized parts. Pittsburg State University's College of Technology strives to stay at the cutting edge of processing materials for additive manufacturing. The capability of making our own 3D-printer filament would allow students to work with new and different materials and would allow students to learn at the forefront of 3D printing technology. The Wayne Yellowjacket Extruder and Brabender Puller and Winder was used to produce 1.75 mm 3D-printing filament. The Yellowjacket required a lid on the hopper that was fabricated via thermoforming. The Brabender puller and winder was necessary for controlling the filament speed entering the winder and isolating the tension created by the spool from the extruder. When extruding plastic, the thickness and cross-sectional profile are dependent on the rate of cooling; therefore, a cooling trough was designed and fabricated. Polylactic acid (PLA) or acrylonitrile butadiene styrene copolymer (ABS) was used to extrude filament from this line. Successful extrusion of 3D printing filament will allow students to produce their own filament as needed for additive manufacturing using the existing Stratysys FDM 1600 and the student-built 3D printer.

Student: Jonathan Harris
Student Status: Undergraduate
Presenting Group Member: Kyle Lichtenauer
Major: Electronic Engineering Technology
Advisor: Mr. Clark Shaver
Title: JaK'D Modular Drum System

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Abstract:
The JaK'D Modular Drum System (MDS) is a drum module that allows the customer to purchase a base module with a certain amount of ports and allows the option to purchase add-on modules to give more input ports as needed. With existing drum modules on the market, if one were to run out of input ports, they would have to buy an entirely new module that has room for the new devices. The JaK'D MDS negates this problem by introducing expandability to the drum module market. The front of the main module has an LCD screen with directional buttons to navigate, as well as an enter button, back button, power button, and six rotary knobs for volume control. Two additional buttons are used to determine which inputs are being controlled with the volume knobs allowing the user to have control over all inputs without cluttering the face with numerous knobs. The screen and navigation buttons are used to assign sound effects to each of the inputs, as well as monitor the sound levels of the inputs. The back of the module has the input and output ports. The add-on modules have no buttons on their top and, like the base module, the inputs are along the back of the add-on modules with the hardwire connection being on the side of all modules.

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Student: Joshua Holloway
Student Status: Undergraduate
Contributing Group Members: Kali Boroughs, Robin Goodreau, Ashton McManis, Adam Pistorius, DeAundre Puritty, Michael Ramirez, Rachel Styers, and Jake Wright
Major: Biology
Advisor: Dr. James Whitney
Title: Historical and Contemporary Distribution of the Nonnative Redear Sunfish (Lepomis microlophus) in the Spring River Subbasin of Kansas

Abstract:
The Redear Sunfish is a nonnative species in the Spring River subbasin (SRS) of KS. The Redear Sunfish has not been sampled in the SRS since 2013, and its status as a benign nonnative versus a harmful invasive species in the SRS has not been evaluated. To assess the invasion status of the Redear Sunfish in the SRS, we measured its current distribution and abundance using backpack electrofishing and seining across 42 sample sites during 2017–2018, then compared our data to historical collection records. We reasoned that increasing prevalence would indicate its status as an invasive species. However, the Redear Sunfish had not greatly increased in prevalence during the last 50 years, as we found it at 12/42 (29%) sites, and at those 12 sites, its mean density was 0.01 individuals/m2. Based on its limited distribution and low abundance, we concluded that the Redear Sunfish is simply an established nonnative rather than an invasive species in the SRS of KS.

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Student: Andrew Huffman
Student Status: Undergraduate
Presenting Group Members: Tyler Burger and Caleb Luthi
Major: Plastics Engineering Technology
Advisor: Dr. Jeanne H. Norton
Title: Improved Molding Tool for Plastics Engineering Technology Injection Molder

Abstract:
Plastic injection molding is an extremely versatile, preferred method of producing plastic parts because it is extremely efficient. In the business of injection molding, it is important to have machines and tools that work properly to get the job done. One such tool is the mold, which forms high quality plastic parts. The main objective of this project is to refurbish the current Frisbee mold to create promotional products for PSU's Department of Engineering Technology. Parts were created with the existing mold to determine what issues needed to be addressed including: excessive flash on the parts/runner, a poor runner/gate design, a poor ejector system, no water for cooling on the mold's B-side, and years of wear and tear. We developed baseline production and cost data when the mold was being tested. Dimensions of the current Frisbee part were also obtained. After finding what could be fixed on the existing mold, we used SolidWorks to create a new thinner Frisbee part design. Additionally, a mold assembly, a mold cavity design, and water channels were added into the B-side of the mold design so that the parts could be cooled. Autodesk MoldFlow Advisor was used to simulate the plastic material's flow in the mold. After the designs were finalized, a new and improved mold was fabricated in cooperation with Vector Tooling, who agreed to donate their services to make the new mold. After the new mold was installed, better quality parts were produced with shorter cycle times, less scrap, and better ejection.

Student: Vedant Jain
Student Status: Undergraduate
Major: Biology
Advisor: Dr. Santimukul Santra
Title: Magnetic Resonance Nano-sensors for the Investigation of Influenza Binding and Fusion Mechanisms

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Abstract:

Magnetic Resonance Nano-sensors for the Investigation of Influenza Binding and Fusion Mechanisms. Vedant Jain [1], Tyler Shelby[1], Elena Mekhedov[2], Joshua Zimmerberg[2], Prasad Dandawate[3], Shrikanth Ananth[3], Ahinsa Ranaweera[4], David Weliky[4], Tuhina Banerjee[1] and Santimukul Santra[1]* Abstract: Fusion between membrane of an enveloped virus and that of the host membrane is one of the very important steps for pathogenesis of the virus the host. This step is critical and is usually protein mediated. For influenza virus, the trimeric hemagglutinin (HA) glycoprotein mediated the membrane fusion of influenza with the host cell. This glycoprotein has two functional peptides HA1 and HA2. HA1 is responsible for helping the virus dock and bind on the sialic acid molecules on the host cell membrane, whereas HA2 participates in membrane fusion by undergoing a conformational change at pH lower than 5.5. Here we present a magnetic relaxation (T2) based technique that uses Liposome Coated Iron Oxide Nanoparticles (LIONs) to better understand this mechanism. Liposomes have recently emerged as an important tool to understand various aspects of biological system and especially to mimic the lipid bilayer of host cell membrane. In our study, the HA trimeric protein was incubated with LIONs in pH environments ranging from 7.5-5.1 and the T2 changes accompanying the fusion were recorded. The effect of different environmental factors such as trypsin (1%), cholesterol composition of Lipid membrane would be evaluated. Ultimately we would demonstrate our newly formulated LION could be reliably used as a new tool for the rapid screening of fusion inhibitors.

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Student: Alec Jones
Student Status: Undergraduate
Presenting Group Members: Shelby Bicknell, Luke Gordon, and Justin Mamerow
Major: Plastics Engineering Technology
Advisor: Dr. Jeanne H. Norton
Title: Comparison of Bioplastics with Conventional Thermoplastics for Consumer Applications

Abstract:

Controversy surrounds the use of plastic products, primarily due to their impact on the environment. Fortunately, bio-based plastics offers a solution by using sustainable resources as starting materials. Our team addressed the task of processing and conducting research on various bio-based plastics that were supplied by an industrial partner and comparing the bio-based plastics to control materials from petrochemical sources. Overall, the goal was to determine which bio-based resin would be the most suitable for use in consumer packaging products. Thermal, mechanical, and chemical properties were analyzed. The control resins used were: Formolene 2610A PP, Ineos Olefins & Polymers PP, and Alathon M5370 HDPE. The bio-based plastics were: Biograde C5508 and C9550, Terralene PP3509, Terralene HD3505, Terratek SC50 and Terratek BD4015. Samples were injection molded to produce samples for further testing. The resins underwent thermal testing by differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA) to determine key thermal transitions and material degradation temperatures to compare control resins to bio-based plastics. Mechanical testing included tensile testing, (following ASTM D638) and Izod impact testing (following ASTM D256). Chemical compatibility tests were conducted (following a modified ASTM D543 procedure) with four typical household cleaners to determine the feasibility of the bio-based plastics for practical use. Mechanical data showed the bio-based plastics had overall lower strength than the controls. The Izod impact results of Terralene HD and Terralene PP were similar to that of HDPE and the PP controls. Additionally, the bio-based plastics demonstrated good compatibility to the household cleaners tested. .

Student: Samantha Kopp
Student Status: Undergraduate
Contributing Group Member: Even Hutcheson
Major: Exercise Science
Advisor: Dr. Allison Barry
Title: Changes in Fat Mass, Fat Free Mass, Cardiorespiratory Fitness and Grip Strength Across College Students

56

Abstract:
Research has shown that traditional college students are more physically fit at the beginning of their freshman year compared to their senior year. PURPOSE: The purpose of this data analysis is to examine how fat mass (FM), fat free mass (FFM), handgrip strength and VO2max change in a college-aged population. METHODS: A five-year cross-sectional design was used to assess a sample of college students (n=3,379; Males=55.4%; BMI: 25.2±5.7; Age:19.4±1.5) in an introductory wellness class. The range in age was 18-25 which were divided into four groups: 1=18-19yrs, 2=20-21yrs, 3=22-23yrs and 4=24-25yrs. Subjects were taken through the following screenings: height, weight, body fat percentage, grip strength, and estimated VO2Max. Body Fat was analyzed using a Tanita. Grip strength was assessed using a handgrip dynamometer. Estimated VO2max and heart rate recovery were assessed using the Tecumseh sub-maximal step test. One-way ANOVAs were conducted to examine changes in the estimated VO2max, FFM, FM and handgrip strength. RESULTS: Comparing the whole population across age groups, there was no significant change in FM and estimated VO2max. However, handgrip strength ($F(3,3103)=11.53, P<0.001$) and FFM ($F(3,1357)=7.58, P<0.001$) did change across age groups. Students had a significant increase in handgrip strength from ages 18-19 (38.13 kg) to ages 24-25 (42.89 kg), respectively. Students also had an increase in FFM from ages 18-19 (57.10 kg) to ages 22-23 (61.82kg), respectively. CONCLUSION: The results demonstrated that college-aged students have both and increase and decrease in measures of fitness and body composition.

Student: Matthew Leymaster
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Jason Ward
Title: Using 3d Drone Mapping for Measurements of Distance, Area, and Volume

57

Abstract:
This research will show how photogrammetry technology is being used in 3d drone mapping to provide accurate measurements of distance, area, and volume.Photogrammetry is defined by Wikipedia as: the art and science of making measurements from photographs, especially for recovering the exact positions of surface points. Photogrammetry is as old as modern photography, dating to the mid-19th century and in the simplest example, the distance between two points that lie on a plane parallel to the photographic image plane, can be determined by measuring their distance on the image, if the scale (s) of the image is known.Photogrammetric analysis may be applied to one photograph, or may use high-speed photography and remote sensing to detect, measure and record complex 2-D and 3-D motion fields by feeding measurements and imagery analysis into computational models in an attempt to successively estimate, with increasing accuracy, the actual, 3-D relative motions.From its beginning with the stereoplotters used to plot contour lines on topographic maps, it now has a very wide range of uses.We will be using the DJI inspire 2 drone combined with a 3d stitching software called Bentley to map the Pittsburg State University campus.This will create a 3d map of the campus that will allow us to measure distance, area, and volume.

Student: Greg McCartney
Student Status: Undergraduate
Presenting Group Member: Jianliang Feng
Contributing Group Member: Lelan Delissa
Major: Engineering Technology
Advisor: Mr. Clark Shaver
Title: Automation in Poker: The AnteM

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Abstract:
The Ante M by Deckadent Games is a poker table designed to teach the uninitiated and entertain the practiced by tracking bets, hands, winners, and losers. This table will seamlessly integrate RFID tracking technology and information displays into a Texas Hold'em Table. The purpose of this table is to help home gamers with their poker night. Often a poker night amongst friends is more about comradery and friendship more than it is about the actual game of poker. The Ante M provides these players a chance to focus on friendly conversation and leave the tedium of tracking the progress of the game to the table. How often during one of these home games are players asking, "How much do I need to bet?" or "Whose turn is it?" The Ante M will keep track of this information and provide it to the player as needed. No more will the game be held up by players not paying attention and no longer will players in the middle of conversation be interrupted by others telling them it's their turn.

Student: Ryan McGinty
Student Status: Undergraduate
Major: Biology
Advisor: Dr. Andrew George
Title: Microclimate use by the gray bat colony in Pittsburg, Kansas

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Abstract:
White-nose syndrome (WNS) is a fungal disease that affects hibernating bats, including the federally endangered gray bat (Myotis grisescens). The only known colony of gray bats in Kansas inhabits the stormwater system of Pittsburg, in the southeast corner of the state. The goal of our ongoing study is to evaluate the microclimate conditions of the Pittsburg stormwater system, specifically as they pertain to suitability for Pseudogymnoascus destructans, the fungus that causes WNS. We used a network of data loggers to obtain periodic temperature and relative humidity measurements throughout the stormwater system. To characterize use of roost sites, we deployed remote infrared camera traps. Microclimate data are being used to create a spatiotemporal microclimate model of the locations used by bats. Models will be compared to data from cave systems to estimate the likelihood of future WNS infection and potential control measures.

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Student: Kinsey Morey
Student Status: Undergraduate
Contributing Group Member: Tucker Morey
Major: Chemistry
Advisor: Dr. Ram K. Gupta
Title: Almond based Electrocatalyst for Fuel Cell Applications

Abstract:
Hydrogen is considered one of the cleanest energy sources. Water spitting is one of the efficient ways to produce hydrogen as a fuel at the industrial level. Water splitting via electrolysis requires an efficient electrocatalyst to reduce the voltage required for water splitting. Currently, precious metals such as platinum are considered as one of the most efficient electrocatalysts for hydrogen production via electrolysis of water. The current challenge is to find a cost-effective alternative for this process. Molybdenum and carbon are low cost and abundant materials which could be used for the synthesis of cost-effective electrocatalysts for hydrogen production. In this work, we used almond as a source for carbon for the synthesis of molybdenum carbide for sustainable and affordable hydrogen production. X-ray diffraction confirmed the phase purity of the synthesized molybdenum carbide. Electrocatalytic activities of molybdenum carbide were investigated in details. It was observed that molybdenum carbide needs a small voltage to generate hydrogen via electrolysis process. Molybdenum carbide showed an overpotential of 117 mV and 180 mV in alkaline and acidic media, respectively to achieve a current density of 10 mA/cm2, which are among the best-reported results. Our study suggests that earth-abundant materials could be used for the synthesis of highly efficient electrocatalysts for electrochemical water splitting to generate hydrogen as a clean fuel.

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Student: Denise Muchangi
Student Status: Undergraduate
Contributing Group Members: Saloni Darji, Sneha Ramanujam, and Zachary Shaw
Major: Biology
Advisor: Dr. Santimukul Santra
Title: Magneto-Plasmonic Nanosensor for the Detection of Ebola Virus

Abstract:
Ebola virus is one of the hemorrhagic fevers that has a high mortality rate with no cure or vaccine. The virus is spread via direct contact with body fluids from an infected individual or contact with infected bats and primates. To increase survival rate against the virus, a rapid detection method must be available. Though there are few point-of-care methods available for Ebola detection, they are not quick and economical. They require more sophisticated methods and resources for identification of the virus. Herein, we present a novel antibody-conjugating magneto-plasmonic nanosensor (MPnS, gold/iron oxide nanocomposite) for the multiparametric detection of Ebola virus within minutes. Low limit of detection (LOD) of virus is possible utilizing MPnS due to its tri-modal detection capabilities via colorimetric, surface plasmon resonance (SPR) and magnetic relaxation (MR) systems. The gold nanoparticles in the MPnS offer SPR and colorimetric detection, whereas iron oxide nanoparticles enable the use of T2 magnetic relaxation technique. Early detection of Ebola and binding receptors will be analyzed using this technology, results will be discussed in this presentation.

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Student: Mohan Perumal
Student Status: Undergraduate
Contributing Group Members: Emilio Estrada and Jenna Schroder
Major: Exercise Science
Advisor: Dr. Derek Crawford
Title: VO2Max Agreement Study

Abstract:
Aerobic capacity (VO2 MAX) predicts both athletic performance and health status. Many tools are available to assess VO2 MAX ranging in both cost and accuracy. Understanding limitations of less expensive tools, likely found in settings such as health clinics or sports performance facilities, will help practitioners in developing accurate exercise prescriptions for their respective populations. To evaluate agreement lower cost VO2 MAX assessment tool (Vacu-Med Vista MINI-CPX) to the industry "gold standard" (ParvoMedics TrueOne 2400). Thirty-one participants (22.5 ± 3.5 years; BMI 24.9 ± 2.3; 51% female) completed two sessions of maximal VO2 MAX assessment using the Bruce Protocol graded treadmill exercise test. The first session of assessment utilized the "gold-standard" unit (TrueOne 2400, ParvoMedics, Inc., Murray, UT). 24-48 hours later the second unit (Vista Mini-CPX, Vacu-Med, Inc., Ventura, CA) was used to assess VO2 MAX again. A Bland-Altman analyses was used to evaluate both potential bias and agreement for between the two assessment tools. The CPX unit significantly overestimated VO2 MAX compared to the TrueOne (Bias = 10.67 ± 5.87 ml/kg/min, LoA = -0.83, 22.18; $t = 1.96$, $p < .001$). However, the CPX unit demonstrates good reliability as 93.5% (29/31 participants) of values fell within the 95% LoA. Further, values above 46.5 ml/kg/min tend to be greater than the mean bias while those below tend to be lower than the mean bias ($r = .605$, $F = 16.80$, $p < .001$). The CPX unit demonstrates good reliability yet a significant overestimation of aerobic capacity.

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Student: Morgan Smith
Student Status: Undergraduate
Major: Biology
Advisor: Dr. Christine Brodsky
Title: Pittsburg State University goes native: a study on the resources and wildlife attraction of a native pollinator garden on college campus

Abstract:
Native pollinator gardens benefit urban communities by promoting pollination and providing support for native biodiversity conservation. Urban green spaces encourage social and physical activity, promote education, and positively influence public health in urban dwellers. Many studies have been conducted in order to fully understand the importance of native species reintroduction. The continuous research in this area of urban ecology can lead to better conservation and sustainability practices. This paper examines what kind of resources (i.e. costs, plants, area) are required to create a pollinator/native garden on a college campus and what kind of wildlife can be attracted by the implementation of a native patch. The study implements methods of analysis of quantitative data on space area and price as well as qualitative data on plant and animal species. The results of this research on plants native to Kansas and the properties of plants in relation to wildlife attraction should conclude that implementing a native garden will attract a variety of wildlife species and promote pollination as well as positively influence public outdoor interaction and education on conservation.

Student: Rachel A. Styers
Student Status: Undergraduate
Contributing Group Member: Jake Wright
Major: Ecology and Field Biology
Advisor: Dr. Christine Brodsky
Title: Establishing Long-Term Monitoring of Birds, Herpetofauna, and Vegetation in Mined Land Wildlife Areas in Crawford and Cherokee Counties

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Abstract:

Recovery efforts on reclaimed mined lands have been ongoing for many years; however, there is a lack of data to indicate whether reclamation efforts are productive and effective. Our objective was to establish long-term ecological monitoring bird, herpetofauna, and vegetation surveys on six reclaimed mined land properties in southeast Kansas. The bird community was surveyed by performing three, five-minute unlimited radius point counts during the breeding season at 11 forest and grasslands sampling locations. Herpetofauna were captured in pit-fall and funnel traps along a drift fence array at each site from April to October. We assessed the structure and composition of vegetation at each sampling location. We observed 354 birds from 47 species, averaging 18 species per site. Within one research site, the total numbers of species were relatively similar across grassland and forested regions. Overall, six species of greatest need of conservation were detected, including Bell's Vireo and Eastern Meadowlark. We observed 209 herpetofauna individuals representing 19 species. The most abundant species were Blanchard's Cricket Frog, Southern Leopard Frog, and American Toad. Species composition differed slightly between forested and grassland habitat, and between sampling methodologies. Our goal is to continue sampling and monitoring these locations to assess impacts of restoration effort and provide recommendations for management of reclaimed mined lands.

Student: Lindsey Williams
Student Status: Undergraduate
Major: Biology
Advisor: Dr. Christine Brodsky

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Title: Climate change impacts on bird communities vary throughout cities in Kansas

Abstract:
It is important to study climate change's impacts on biodiversity in order to find a solution before the effects on wildlife are irreversible. Our research objective for this project was to determine if climate change affected long-term bird trends in urban and rural areas throughout Kansas. Our hypothesis was that climate change will decrease bird abundance and species richness because altered climate patterns like storms, droughts, and heat waves, may cause a decrease in suitable habitat. We would expect these trends to be strongest in cities, due to the urban heat island effect. The methods used for this project included downloading Bird Breeding Survey (BBS) data and average temperature for the month of June for five locations throughout Kansas. We collected data from 1970 to 2015. To determine the relationship between temperature and bird abundance and species richness, we conducted correlation analyses. All locations' bird communities had variable relationships with temperature. Most cities had weak negative relationships between temperature and species richness and abundance. However, one rural town, Kanopolis, had a strong positive correlation between temperature and bird abundance. We also found differences in community composition across urban and rural BBS sampling locations. For example, we found more urban adaptor and exploiter species, like European starlings (Sturnus vulgaris) and house sparrows (Passer domesticus) in Olathe, as compared to urban avoider species in rural towns, like eastern meadowlarks (Sturnella magna). Overall, climate change impacts might vary throughout different locations due to levels of urbanization, habitat availability, and other abiotic factors.

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Student: Emmilie Blythe
Student Status: Undergraduate
Presenting Group Members: Robert Armstrong and Janice McCourt
Major: Social Work
Advisor: Dr. Hyejoon Park
Title: Comparative Analysis of Drug Use between Socioeconomic Status

Abstract:
Our study will compare drug use and socioeconomic status amoung college students. In order to gather information for our study we will send out an anonymous survey to Pittsburg State University students. The survey will be anonymous. We will compare what the surveys show to research done by other colleges about drug use. The survey will consist of several demographic questions, which include: What is the age of the participants?(ages 20 and below), The participants ethnicity, College level: Freshman, Sophomore, Junior or Senior, Is the participant employed?, The participants income. Then the survey will ask several questions about drug use which include: Any use of tobacco?, Has the participant ever experimented with an illegal substance?, What age did they first experiment with drugs?, What the participant has experimented with?, Do they still use this drug and if so how often? The the survey will end with some cultural questions about Pittsburg State which include: Do you think Pittsburg State University has a drug problem?, Do you think that marijuana should be legalized?, Do you consider yourself struggling with addiction to an illegal substance?, Do you know where to go for help? After gathering this information we will be able to compare and show data between socioeconomic status and drug abuse.

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Student: Jui Chen
Student Status: Undergraduate
Major: English and Modern Languages
Advisor: Dr. Phil Rudd
Title: Writing and Sentence Style Analysis in the Alchemist by Paulo Coelho

Abstract:
In The Alchemist, Paulo Coelho inspired people how to follow their dreams by telling a Shepherd's brave and mystical story. The novel attracts readers and brings them into the shepherd's journey to figure out what treasure he is looking for. What this book portrays just what an alchemist does, transforming "lead to goad". Page after page makes readers understand that every great thing starts from a simple thing, and finally it "leads" readers to their true personal "goal" in life. Similarly, every great book is built on every single word and grammar structure, thus this study focuses on analysis the grammar and usage in this book. This study identifies Paulo Coelho's writing style by analyzing and examining what kinds of sentence structures, sentence patterns, moods, verb tense and common voice Paulo Coelho uses in his novel, The Alchemist. In this study, a new approach to style analysis is used. The method employs traditional diagraming or the Reed-Kellogg system to map out a depiction of Paulo Coelho's writing, which turns out to be an illuminating way to visualize a writer's style. The results show that Paulo Coelho mostly used compound, indicative sentences in the simple past tense and active voice.

Student: Christian Dowling
Student Status: Undergraduate
Presenting Group Members: Sarah Cass and Morgan Hensley
Major: Social Work
Advisor: Dr. Hyejoon Park
Title: The Correlation Between Stress and the Level of Alcohol Consumption in College Students

68

Abstract:
Stress levels in the life of a college student can be extreme. Sometimes the only way that the student knows how to cope with the high levels of stress is to consume alcohol. This coping strategy is not healthy and unfortunately, the use of alcohol as a coping strategy can lead to more harm than good. Recent studies have shown that 80 percent of all college students in America consume alcohol and that almost half of those students have binge drank in the past two weeks. This study evaluates the relationship between stress levels and the level of alcohol consumption in college students. This study is a mixed method study that was conducted with the use of surveys which means that the study was conducted using random sampling. These surveys were conducted on the website SurveyMonkey.com. The surveys were conducted on anonymous college students. We surveyed multiple college students about their demographics (i.e. age, race, gender, etc.) history with alcohol, their current level of alcohol consumption, their degree and the stress that is connected to their specific degree. Based on these findings, we have been able to determine the relationship between multiple factors including: the level of stress in certain degrees, the level of alcohol consumption in different years of college, the prevalence of the use of alcohol as a coping mechanism, the connection between a student with mental health issues and the level of stress that they feel, etc. The following paper outlines our methodologies, findings, and proposed solutions to the issue that we are addressing.

Student: Latayzia Harris
Student Status: Undergraduate
Major: History
Advisor: Dr. Kyle Thompson
Title: Mary Stuart: Turbulence in Politics & Religion

69

Abstract:
Mary Stuart's upbringing played a large part in her political and religious positions, as well as her position as a female ruler in a land dominated by the whims of men. Mary is often portrayed as a passionate woman whose life was dominated by her emotions. At 6 days old Mary inherited the throne to Scotland, a highly contested region located directly above the ever-expanding realm of England. Mary spent much of her time in France, being raised as the Dauphiness to strengthen the ties of Catholic monarchs. Historians like John Guy and Antonia Frasier frame this as a very formative time for Mary. In her stead, her mother, Mary de Guise, was left to preserve the peace in Scotland for her young daughter. During this time Scotland's religious climate flipped and, upon Mary's return to her homeland, she was virtually an outsider. It is disputed on whether or not Mary truly felt this way, and this paper will explore different views on the subject. Mary's relationship with Elizabeth is often focused on and both Guy and Jane Dunn have studies that take slightly different stances on this relationship. As Mary had her own claim to the English throne through Margaret Tudor this relationship was quite interesting. Mary was seen by many to be the rightful successor to the English throne due to the execution of Elizabeth Tudor's mother, Anne Boleyn. As Europe faced a turbulent transition to its modern period its monarchs like Mary faced turbulence as well. .

Student: Ellen Long
Student Status: Undergraduate
Major: History
Advisor: Dr. Kyle Thompson
Title: Religion, Politics, and the 'Virgin Queen'

70

Abstract:
This paper will analyze Elizabeth I's political style and the effects on it by both religion and influential men in the "Virgin Queen's" council. Her relationships with Mary Tudor and Mary, Queen of Scots, and their religion, affected her politics and how her Protestantism clashed with these two Catholic monarchs. Comparing Mary Tudor's forceful assertion of Catholicism in her reign to Elizabeth's approach to Protestant dissenters will demonstrate religion's role in their politics. I will also analyze the aspect of religion on Elizabeth's and Mary Stuart's dual claims to the English throne. Elizabeth Jenkins's work, Elizabeth the Great, explores all aspects of Elizabeth's life but focuses on her reign as queen and the treatment of Catholics under her now Protestant reign as compared to Mary's treatment of dissenters. From the very beginning of her reign, Elizabeth was viewed as illegitimate by some English Catholics as well as Scottish Catholics. Many believed that Mary Stuart, Queen of Scots, had the legitimate claim to the English throne rather than Elizabeth. Anne McLaren's article continues to explore their relationship. Allison Heisch's article discusses the role of men and the patriarchy in Elizabeth's rule and the perpetuation of the image of the "Virgin Queen". This paper will ultimately analyze the role of religion and Elizabeth's relationship with Mary Tudor and Mary Stuart as well as the perpetuation of the "Virgin Queen" and the role of men in attempting to influence Elizabeth and her reign.

Student: Morgan Myers
Student Status: Undergraduate
Major: History
Advisor: Dr. Kyle Thompson
Title: Interpretations of Bloody Mary's use of Religion and Politics

71

Abstract:
This paper looks at the political style of Mary Tudor and examines how her upbringing and gender influenced her policies and ultimately whether she was an effective leader. Religion was paramount during her reign, and heavily affected Mary's policies. Her actions resulted in the nickname, "Bloody Mary"; this paper discusses if this is a valid name for her and overall how the Protestant Reformation impacted her time as queen. I will examine the extent to which Mary was influenced by men in her life and how they and her gender impacted her reign. David Loades wrote, "The Reign of Mary Tudor: Historiography and Research," which will be compared to other sources on Mary Tudor. This comparison will help provide clarity to the differing interpretations of Mary Tudor throughout history. Loades contrasts the difference of opinion in Protestant and Catholic writers. He argues that Protestants view Mary as isolated and indifferent to her subjects, and that God and progress were identical. Catholics, however, believe her failure in being a leader was a tragedy and she could not have made progress as a leader. Anna Whitelock challenges the popular narrative of Mary Tudor being a bloody queen who paled in comparison to Elizabeth. Whitelock calls Mary Tudor "one of the most reviled women in English history," and pushes for Mary Tudor to be remembered not as "Bloody Mary," but as a female ruler in a male dominated world.

Student: Kamron Porter
Student Status: Undergraduate
Major: Communication
Advisor: Dr. Joey Pogue
Title: Effects of Femininity on Masculinity

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Abstract:
During my time in the Communication Department at PSU, I have learned examining the actions of the human race is a very intricate assignment due to the complexity of each individual. However, I will be completing a research study exploring gender equality including gender roles and the lasting effect of feminism on the male population of America. It is extremely hard to understand exactly how every individual male or female may be feeling. Nevertheless, I want to better understand how the recent feminist movements have aided the negative representation of men due to something out of their control, their gender. This will be completed through a survey where the participants will be asked to share their beliefs on how gender is perceived and how they believe the recent events have impacted man and his masculinity. This study will include the Agenda Setting Theory in regards to conforming to the norm of the public and their opinions on gender equality. Findings, limitations, and methods will be conveyed.

Student: Danielle Rakestraw
Student Status: Undergraduate
Major: Social Work
Advisor: Dr. Brad Cameron
Title: Ted Bundy: The Development of a Serial Murderer

73

Abstract:
Who is Ted Bundy, and why did he commit the crimes that he did? This study was devised to assess the life of Ted Bundy, one of the most prolific murderers in the United States. This secondary research study was conducted using interviews from Bundy, biopsychosocial analyses conducted of him post-arrest, testimonials from people who knew him, and research regarding serial killer typologies and motivations. This information has been complied in the form of a poster board presentation, complete with the researcher's own biopsychosocial assessment of Bundy, an analysis of the motivations for his crimes, and a timeline of his life. The results of this comprehensive analysis will provide insight on what it took for Ted Bundy to become one of the most prolific serial killers in U.S. history.

Student: Kimberly Ruhl
Student Status: Undergraduate
Presenting Group Member: Megan Taylor
Major: Social Work
Advisor: Dr. Hyejoon Park
Title: Anxiety and Depression on Academic Performance

74

Abstract:
Anxiety and depression are common mental health issues among college students and can affect how a student will perform in school. Students with anxiety or depression how poorer academic performance when compared to students who do not. The method being used is a quantitative method of random sampling to ask college students about if they have ever experienced anxiety and depression, and if it has affected their academic performance. The college students can vary in age, gender, race, and majors. The survey consists of ten multiple choice questions that will measure if the student has experienced anxiety or depression, how often, and if they feel like their academic performance has been affected. The data will be examined to see if there is a correlation. It was hypothesized that there will be a correlation between anxiety or depression and the students school performance.

Student: Breonna Shockley
Student Status: Undergraduate
Presenting Group Member: Marisela Resendiz
Major: Social Work
Advisor: Dr. Hyejoon Park
Title: Food insecurity and factors of PSU students

75

Abstract:
A college students current socioeconomic status contributes to food insecurity. A students current living situation may cause barriers to food access. When students do not have a sense of security of food and a student is hungry, he does not feel safe, and it is hard to help him synthesize class material. Meeting students' basic needs is vital for them to fully concentrate on obtaining the information in a class in a way that they can apply it, learn, and take it forward eventually acquiring assimilation into society. We are conducting a qualitative study of PSU undergraduate students ages 18+. The research questions we will be using to conduct are research are as followed. Within the last year (What have your eating conditions been like?) In the last 30 days have you skipped a meal because you could not afford it? In the last week have you skipped or missed a meal because you could not afford it? If you have been lacking food what may be some of the reasons? What emotions do you have about your food insecurity? Do you have a job? Do you have access to a vehicle? Do you live on or off campus? Please describe your living arrangement. Are you from a low income family receiving a pell grant or other financial assistance/benefits? Do you feel that your grades are affected about your hunger? What interventions would make you feel more secure with food? Have you received food from a food pantry before? If you responded no on the previous question what is the reason? Do you think that your school offers enough support for students in need of food assistance? Why do you think it would be important for the food pantry here at PSU to be expanded? If a food pantry with a bigger food variety would be implemented here at PSU would you be willing to seek assistance if needed? Current grade level? When did you first experience food insecurity?

Student: Abbey Westmoreland
Student Status: Undergraduate
Presenting Group Member: Eva Cumpton
Major: Social Work
Advisor: Dr. Hyejoon Park
Title: Affects of Alcoholism Within Family Structures

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Abstract:
Employing qualitative study with purposive sampling methods, we want to study family mechanism exposed alcoholic consumption. Testing the effects of alcoholism within family structures, we examined whether children and the spouse of the alcoholic displayed any signs of emotional or physical abuse after treatment had been in place. The number of years post treatment varied upon different individuals. We also tested whether the different treatment options such as AA or in patient treatment had longer lasting affects. The sample size included 10 white, males from different backgrounds. Family sample size includes 5 white individuals, 4 females and 1 male. Outcomes were measured by personal experience, treatment options, and the different stress levels of the individuals in said trial. Research questions for the alcoholic include, How do you think being an alcoholic affected your family, and do you still get the urge to drink. Questions for the family include, How do you think your loved one being affected by alcoholism affected you. The Outcomes will be discussed in implication of the paper.

Student: Lindsey Chambers
Student Status: Undergraduate
Major: Music Education
Advisor: Mr. Rion Huffman
Title: Refraction Ball Photography and Portraiture

77

Abstract:
Using a glass ball (known as a crystal ball, lens ball, or refraction ball), one is able to capture a unique perspective in a photo. When light passes through a denser mass, refraction occurs. An inverted image of the scene behind the ball is seen. Refraction balls are most often used in landscape or up-close photography, where the ball creates a similar effect to a fisheye lens. Though, the refraction ball has much more flexibility. The ball can be used within the scene to create an interesting focal point. This project uses a sixty millimeter refraction ball to showcase people in a different way than a traditional portrait. Using the ball in the specific category of portraiture, one must combat the obstacles of the inverted image (which may also be considered a creative advantage) as well as distortion around the edges of the ball. A refraction ball is a tool unlike others to enhance an image, especially a portrait.

Student: Audrey Dainty
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Rion Huffman
Title: Seeing What Is Not There: The Art and Process of Infared Photography

78

Abstract:
nfrared photography is a seldom-explored photographic technique, however there is a wealth of knowledge to be gained in regards to tonality and surrealism when utilizing this technique. The process of capturing infrared images through an Infrared lens filter is a more practical, yet still complex, approach to this photography technique. Resulting images lack definition and need refinement through digital editing. This poster will serve the following purposes: 1. Outline the process of capturing images with an Infrared sensitive lens filter. 2. Outline the process of editing infrared images in order to properly utilize their tonality and surrealistic properties.

Student: Christina Epler
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Rion Huffman
Title: It Takes A Village An exploration of the components needed to create professional themed fashion portraiture

79

Abstract:
Arguably, there are few examples of imagery in advertising that are more powerful than professional quality fashion portraits. However, creating successful images in this genre is incredibly challenging. Photographers must not only master the crafts of lighting, posing and other techniques in their profession, but they must also master scheduling, time management, communication and interpersonal relationships. The photographer must rely on a team of professionals, from make-up artists to models. This poster will document one undergraduate students' journey to master these challenges and complete a series of themed fashion portraits for commercial usage. Emphasis will be placed on documentation, explanation of techniques and visualization of the Final products.

Student: Alex Gourlay
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Rion Huffman
Title: Platinum Palladium Printing

80

Abstract:
With the arrival of the digital age along with the advancement of the digital cameras and cell phone cameras, photography has never been more inviting and accessible. The downside of this new ease of access is that some of the older more difficult techniques associated with film photography have been abandoned as most of these involve a dark room. One such technique is Platinum Palladium Printmaking. This is a process that is renowned for creating the highest quality black and white prints possible with the ability to last up to 1000 years. What I would like to explore is the process of creating them using equipment available to GIT students along with comparing the final prints to ones bought from MPIX.com to see if the rather expensive process is actually worth the cost.

Student: Elliecia Hall
Student Status: Undergraduate
Major: Illustration
Advisor: Ms. S. Portico Bowman
Title: Elliecia Hall: *Five Sided*, Senior Exhibit

81

Abstract:
My art is about balance and imbalance. It's both light and dark. I take dark themes and present them through a feminine and colorful lens. Feminine things are often perceived as innocent and naive, but I've never felt that to be true to my experience. I use art to articulate myself more fully; to bring life to the anger in my heart as much as the joy in my soul. Dreams and nightmares have had such an effect on my life. Most of my earliest memories have been of my sleeping world. And while my world is affected so strongly by the darkness of sleep, I see the world in vibrant color, and look to paint my illustrations in the same way I see everything around me.

Student: Sada Kernodle
Student Status: Undergraduate
Major: Fine Arts 2D
Advisor: Ms. S. Portico Bowman
Title: Sada Kernodle: *Five Sided*, Senior Exhibit

82

Abstract:
There are seven billion people existing on this earth. That's seven billion unique and complex minds viewing our natural world. My work includes images of organic life with the physical world. Through this, I hope to inspire those billions of minds to create, explore, and gradually heal through the process of making art. The combination of the human mind, body, and spirit with nature in its rawest form, has the ability to create powerful art pieces. This is the new global footprint for the world.

Student: Joshua Kukowski
Student Status: Undergraduate
Major: Art
Advisor: Ms. S. Portico Bowman
Title: Josh Kukowski: *Five Sided*, Senior Exhibit

83

Abstract:
I am an artist with his mind in the future. I find myself obsessed with the unknown that the future holds. My work should evoke the sense of wonder and motivation that is felt when we sent the first man to space and the first man to the moon. I create scenes with visual and textual reality, so others join me, invited into the world and experience the wonder yet unknown. My work focuses on scale and the scale of humans to their creations that already is and could be in the future. I want people to view my work and find themselves swept from the present, where many seem to be stuck, and into my future.

Student: Natasha Lawrence
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Rion Huffman
Title: Melding the Mediums; Combining fine art, graphic design and product photography to create commercial images

84

Abstract:
This project grew from a little girl enjoying paint by numbers, to an undergraduate student's passion for graphic design and photography. The poster will showcase that students ability to synthesize information about fine art, graphic design and product photography techniques to create a series of finalized composite images with commercial value. The documentation of this academic journey will serve as a roadmap for others to understand the challenges and the overall process to meld these three mediums.

Student: Brittany Lindsay
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Rion Huffman
Title: Conveying Emotion through Lighting on an Expressionless Face

85

Abstract:
The purpose of this project was to explore how light affects the overall emotion of a picture when color and facial expressions are removed. Typically, a viewer's emotion is affected by color and expressions seen on different faces. Each model will have their portrait taken in six different light set-ups. Through those six different photos, I will demonstrate how much light affects a viewer's interpretation of mood for each picture.

Student: Kaitlynn Maslen
Student Status: Undergraduate
Major: Art
Advisor: Ms. S. Portico Bowman
Title: Kaitlynn Moslen: *Five Sided*, Senior Exhibit

86

Abstract:
Watercolor has been my medium of choice for years because of its ability to slowly build the scene with controlled washes of color. The gossamer layers of watercolor have an enchanting effect translating the narratives I explore. Dreams often reflect my emotional state in subtle, surreal ways. I consider the symbols and incongruities in my dreams and I often arrive at revelations or find solutions to problems. My dreams operate with insight at a level beyond what I have in the waking world. These are translated into my artwork through the expression of a human figure along with symbolic aspects of the natural world. This usually includes serene bodies of water, trees and foliage found in unexpected places, and docile forest animals.

Student: Brooke Mock
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Rion Huffman
Title: Splashes in Product Photography

87

Abstract:
This project was done in order to learn more about splash photography for product work. The goal was to learn what kinds of ways one can create splashes in a photograph, without having to use to much photoshop manipulation. As well as experimenting with the difference in pouring a liquid and dropping an object into a liquid.

88

Student: Pablo E. Ortiz
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Rion Huffman
Title: The Art of Creating Photographic Portrait Sketches

Abstract:
The Art of Creating Photographic Portrait Sketches The art of creating a professional quality photographic portrait is a skill that an undergraduate student may take their entire educational career to master. On a separate path, an undergraduate may also take their career to master freehand drawing and sketching. When these two creative paths align, the results can be extraordinary. This poster will showcase the journey of one undergraduate student to combine their photographic and artistic portrait skills along with software techniques to create one of a kind photographic portrait sketches. The poster will serve as a best practices guide to the creation of each image.

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Student: Sarah Walden
Student Status: Undergraduate
Major: Art
Advisor: Ms. S. Portico Bowman
Title: Sarah Walden: *Five Sided,* Senior Exhibit

Abstract:
Ever since I was a little girl my mother inspired me in the gardens with her flowers. It is in the gardens that I found my inspiration for art. Working in the garden is inspiring to me. I want to be a part of the process that points to the path of art. Illustrative images affects the influence of my viewers. I intend to express deep subliminal images to spark creativity within my viewers lives, that will encourage them to work for a better future as well. The subliminal in my work deals with human emotions and experiences. Art can be used to heal and bring people together to make a change. A few people can be a big change. The mission for my art is to inspire others, so that I may inspire the rest of the world to save itself though creativity. Though the elements of art, expression is created, transferring knowledge from the artist to the viewer. Art is more than just materiality, it is the silent language of color and form that speaks to the consciousness of the audience.

90

Student: Lydia Winters
Student Status: Undergraduate
Presenting Group Members: Carter Bowman, Kaitlyn Campbell, Eu Dee Ooi, Aubri Stahl, Allison Tucker, Taylor Unke, and Reid Williams
Major: Graphic Communications
Advisor: Mr. Jason Reid
Title: The Effect of Usability Research on the World Class Sports Website

Abstract:
User Interface Design (UI) and User Experience Design (UX) have become important parts of integrating the human experience into the design of digital products and services we use every day. Usability Research is the foundation of these two areas. It enables the research for improvement of quality interaction between a user and a company (UX) to be put into action by designing, prototyping and iterating the user interface (UI) before development. This project is a study of the effect that usability research has on the development of a new website for World Class Sports. It implements changes to the site layout and design based on the insights revealed by usability testing; the act of observing one person at a time doing specific tasks, so that confusing or frustrating issues can be detected.

91

Student: Madison Wooldridge
Student Status: Undergraduate
Major: Graphic Communications
Advisor: Mr. Rion Huffman
Title: Bringing Still Photos To Life Using Animation Techniques

Abstract:
Cameras are a tool used to capture still images. This project examines a way to bring still images to life without using any video components. By studying basic animation principles, and dissecting photos based on subject, background, and foreground Adobe Creative Suite will be utilized to bring still photos to life. Through my research, I discovered the best software for creating moving photos. This project also finds the best way to photograph images, so the dissection of the subject, background, and foreground is seamless and a more streamlined process.

92

Student: Niloofar Arasteh Nejad
Student Status: Graduate
Major: Polymer Chemistry
Advisor: Dr. Ram K. Gupta
Title: Mesoporous ZnMoS4 as a supercapacitor electrode material with battery-like behavior

Abstract:
This paper reports the successful synthesis of bimetallic sulfide ZnMoS4 (ZMS) using a solvothermal method. The structural and morphological properties of ZMS were identified using several characterization methodologies. ZMS material was produced in a sheet-like morphology with a mesoporous structure and its supercapacitive performance was examined. CV and GCD measurements confirmed that ZMS is capable of storing electrical energy showing a battery-like behavior which is expected to proceed via K+ ion intercalation/de-intercalation within the layered matrix of ZMS. Upon raising the current density from 0.7 to 10 A g-1, its specific capacitance slightly decreased from 280 F g-1 to 243 F g-1, maintaining 86.79% of its initial capacitance, which indicates that the ZnMoS4 compound has a high-rate capability. In addition, the ZMS electrode displays excellent long-term stability preserving a capacitance retention of ~110% even after 1000 cycles, which is likely attributed to the enhanced diffusion of electrolyte ions within the electrode active material as inferred from EIS measurements.

93

Student: Nikhila Bashetty
Student Status: Graduate
Major: Graphics Management
Advisor: Dr. Tatiana Goris
Title: Job Search Experiences of Asian Female Students Pursuing Advanced Degrees in Engineering Technology

Abstract:
The image of engineering as a masculine profession has reproduced the perception that engineering is unsuitable for women. Various strategies have been used to try to increase the number of women entering engineering education and employment, but their success has been limited. This study will provide explicit insights to the problems encountered by the female engineers from Asia. This study will help Asian women engineers' aspiring careers in American engineering industries to understand the real-life scenario in terms of employment in the USA. It will also help the employers to acknowledge the problems faced by the female engineers and incorporate the necessary changes in their industries. The purpose of this study is to investigate the job search experience of Asian female students pursuing advanced degrees in Engineering technology in American universities. The study will focus on the issues encountered by Asian women engineers during their search for full-time employment in the American IT industry. Owing to the immense variety of cultural and social settings, these women are usually faced with unfamiliar situations and added emotional stress. The study will be conducted under the qualitative methodology and ethnographic case study design. This study involves interviewing two study groups of 10 students each from Pittsburg State University and Kansas State University. Each study group consists of 10 Asian female graduate students between ages 22-28 pursuing a graduate degree with an IT major. The study will focus on possible typical scenarios in terms of employment search in the American IT industry.

Student: Manaswini Bhamidipati
Student Status: Graduate
Major: Technology
Advisor: Dr. Tatiana Goris
Title: Investigation of the most common misconceptions of employers about Asian female, searching for a position in the engineering field in the United States

94

Abstract:
The purpose of this study is to identify the common misconceptions of employers, about the Asian female employees' who are searching for a position in the engineering field. The study is conducted under quantitative methodology and ground theory design. The participants of this study are aware of the content of the study and are not forced to participate in the study. The research is limited to the United States. Asian female immigrants with an engineering degree are encouraged for the study.

Student: Jiawei Xu
Student Status: Graduate
Major: Biology
Advisor: Dr. Neil Snow
Title: Morphology and Patterns of Leaf Venation in New Caledonian Syzygium (Myrtaceae)

95

Abstract:
The island of New Caledonia is a globally recognized biodiversity 'hotspot' characterized by a rich flora and a large number of endemic species, combined with highly threatened natural ecosystems. It has about 3400 native plant species, nearly three quarters of which are endemic. Syzygium, the largest woody genus in the world, is common in New Caledonia with approximately 70 species, but remains poorly studied overall. Some specimens of Syzgium appear to be new species in need of scientific descriptions. New Caledonian Syzgium also is threatened to a lesser degree by the myrtle rust virus and local mining. Many species of conservation concern in Syzygium have not been given protection, and new information of is useful for protecting some species. This study of leaf architectural traits among New Caledonian Syzygium is being conducted to develop a dichotomous (identification) key based on morphological characters including leaf blade length, leaf base shape, petiole width, oil gland size, and oil gland density, and similar traits. The key will be of immediate practical value to field researchers, given the many species and that individuals only flower irregularly. In addition, these kind of plant traits represent the raw material for scientific research of ecophysiology, evolution, and ecology, and provide a window into species richness and ecosystem functional diversity. The study also will analyze in detail patterns of leaf venation using leaf clearing techniques. Leaf venation patterns help interpret the relationship between plant form and function, and provide insight to how plant interacts with their environment.

Student: Camila Zequine
Student Status: Graduate
Major: Polymer Chemistry
Advisor: Dr. Ram K. Gupta and Dr. Pawan K. Kahol
Title: Nanosheets of CuCo2O4 as a High-Performance Electrocatalyst in Urea Oxidation

96

Abstract:
The urea oxidation reaction (UOR) is a possible solution to solve the world's energy crisis. Fuel cells have been used in the UOR to generate hydrogen with a lower potential compared to water splitting, decreasing the costs of energy production. Urea is abundantly present in agricultural waste and in industrial and human wastewater. Besides generating hydrogen, this reaction provides a pathway to eliminate urea, which is a hazard in the environment and to people's health. In this study, nanosheets of CuCo2O4 grown on nickel foam were synthesized as an electrocatalyst for urea oxidation to generate hydrogen as a green fuel. The synthesized electrocatalyst was characterized using X-ray diffraction, scanning electron microscopy, and X-ray photoelectron spectroscopy. The electroactivity of CuCo2O4 towards the oxidation of urea in alkaline solution was evaluated using electrochemical measurements. Nanosheets of CuCo2O4 grown on nickel foam required the potential of 1.36 V in 1 M KOH with 0.33 M urea to deliver a current density of 10 mA/cm2. The CuCo2O4 electrode was electrochemically stable for over 15 h of continuous measurements. The high catalytic activities for the hydrogen evolution reaction make the CuCo2O4 electrode a bifunctional catalyst and a promising electroactive material for hydrogen production. The two-electrode electrolyzer demanded a potential of 1.45 V, which was 260 mV less than that for the urea-free counterpart. The study suggests that the CuCo2O4 electrode can be a promising material as an efficient UOR catalyst for fuel cells to generate hydrogen at a low cost.

Student: Jennifer Bowers
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Umbilical Cord Milking at Birth

97

Abstract:
The World Health Organization recommends delaying cord clamping for at least 30-60 seconds after the birth of a full-term newborn. However, the recommendation on the time of cord clamping is not as clear with preterm infants or infants who need immediate resuscitation. The purpose of this study was to examine the best, most recent evidence regarding the timing of cord clamping. The methodology was a literature review. Recent research has focused on umbilical cord milking prior to cord clamping. Umbilical cord milking is described as "the unclamped umbilical cord is grasped and blood is pushed toward the infant several times before it is clamped to auto-infuse blood into the preterm neonate," (Katheria et al, 2015, p. 62). This technique has been shown to have numerous benefits in preterm infants, including decreased rates of intraventricular hemorrhage, higher levels of hemoglobin/hematocrit, decreased risk of oxygenation at 36 weeks, and higher rates of systemic blood flow. Umbilical cord milking is a way to ensure more blood volume reaches the neonate at a time where delayed cord clamping is not an option.

Student: Brynna Brouwer
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Nurse-to-Nurse Bedside Handoff: Improving Communication and Patient Safety

98

Abstract:
Effective communication and patient safety are very crucial aspects of nursing care. The purpose of this research was to explore the evidence supporting bedside reporting with a standardized handover tool and to identify the problems that exist when no standard handover method is used. Interventions and improvements that can be implemented to bring about better outcomes in patent safety and effective communication will be identified. Bedside nurse-to-nurse change-of-shift reports as well as a standardized handover tool are effective means of increasing shared understanding while improving the quality of care and the patients safety. Bedside reporting with a handover tool such as the I-PASS, SBAR, or SOAP note help to eliminate errors that occur when handovers are without structure. Bedside reporting is also a means of including the patient and their family in the care they are receiving, and thus increasing the quality of the patient centered care. Although there is a great deal of research done that proves the validity and effectiveness of nurse-to-nurse bedside reports and handover tools, there is a lack of implementation by hospitals.

Student: Rhyan Elliott
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Pediatric Hospital Environments: Do They Make A Difference?

99

Abstract:
Pediatric Hospital Environments: Do They Make a Difference? The environment can have an extreme impact on a child's well-being, growth, and health. This should be taken into consideration especially for those children that are surrounded by a hospital environment. The healthcare system can come across as extremely intimidating and frightening to young patients. The purpose of this research study is to change this mind-set by creating a more welcoming atmosphere through child-friendly interventions such as, magic, colorful art, and nature. By conducting interviews with the children of these hospitals and using visual and exploratory techniques, the essence of keeps a child's spirit alive can be captured to fullest. The research has shown that it is important to take children's perspectives into consideration and to implement them into the design of pediatric hospitals. Often times children's opinions are overlooked, forgotten, or laid to side when compared to adult perspectives. By performing this research study, children's thoughts and ideas can be gathered and then applied to the beginning of the design process. The ultimate result of this research study is that there will be quick healing and increased satisfaction as a whole in the pediatric patients and their families.

Student: Erika Ellis
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Directed Valsalva Pushing Versus Spontaneous Pushing

100

Abstract:
The purpose of this study is to determine if spontaneous pushing during the second stage of labor produces better maternal outcomes than the more commonly used directed Valsalva pushing. A literature review of the recent studies has been performed to determine if Valsalva pushing is simply archaic or absolutely necessary for healthier mother/baby outcomes. To recommend that women go against their primal urges to push in the manner that their own bodies are directing them, indicates that there must be research-based evidence to intervene in the natural order of things and use Valsalva pushing instead. When in fact, there are several study results proving that women using spontaneous pushing experienced less pain, fatigue, and appreciated an overall more positive experience over directed Valsalva pushing. Another study revealed decreased bladder capacity and problems with the first urge to void three months postpartum after use of the Valsalva pushing technique. The only current evidence to support directed Valsalva pushing is due to a shorter second stage of labor, although, despite the shorter duration, the maternal and fetal outcomes were the same using both techniques. At this point in time there does not seem to be enough research-based evidence to recommend one pushing technique over the other, therefore the only recommendation should be to allow birthing mothers to push naturally and spontaneously, when their bodies instinctively tell them it is time to push.

Student: Kylie Farris
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Breastfeeding vs. Formula Feeding: The Effects on Cognitive Development

101

Abstract:
If one was asked "which is better: breastfeeding or formula feeding?" The most common answer would be "breastfeeding." This would be the answer 9 times out of 10. It is a known fact by a wide range of people, that in general, breastfeeding is the better option. Infants who are breastfed exclusively in the first six months of life tend to have better overall health outcomes than children that are fed only iron-fortified formula or a combination of the two. Therefore, it is likely that breastfeeding will indeed also improve cognitive developmental outcomes. That is the purpose of this study. To compare the cognitive developmental outcomes in infants who are breastfed as opposed to formula fed, and how this will affect them during their lifespan. Breastfeeding is not hard to do or learn. It is the most convenient and has endless benefits for both parties. Still, only a meager one-fourth of all babies are breastfed exclusively to six months of age in the United States. There are components in breast milk that lead researchers to believe that breast milk alone can have enough of an impact to make a difference in cognition. In order to prove this, researchers have done tests to evaluate cognitive abilities. These tests evaluated problem solving and vocabulary, along with many other skills. There are still many uncertainties in the proposed positive outcome that breastfeeding can indeed improve cognitive development. However, if there is any chance that it could play a factor in benefiting the infant, then we should most definitely promote breastfeeding whenever possible.

Student: Mary Gathoni
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Janis Schiefelbein
Title: The Decision and Experiences of Families and Hospice Nurses Use of Oxygen at End of Life: A Qualitative Study

102

Abstract:
Minimal research efforts have focused on why family members make the decision to use oxygen therapy for their loved one at end of life; and the thoughts of hospice nurses who recommend the use of oxygen. Many families and nurses believe the use of oxygen therapy in palliative care is a practice endorsed by the medical community. However, this is inconsistent with existing knowledge that oxygen use at end of life contributes to comfort and decreases breathlessness or dyspnea. Dyspnea, the sensation of breathlessness or inadequate breathing, is common for patients with end of life illnesses. Dyspnea occurs when an imbalance exists between the perceived need to breathe and the perceived ability to breathe. It is the "experience" of shortness of breath, and it may or may not be associated with suffering. It is important to understand the perceptions and experiences of family members who authorize the use of oxygen at end of life for their loved ones and to explore the beliefs of nurses caring for these patients. Patients receiving oxygen near death receive no value from the use of oxygen. Findings from research studies suggest that oxygen therapy at end of life is not beneficial and poses a dilemma for nurses and other health care providers in providing appropriate nursing care without prolonging life. Despite the evidence that oxygen therapy is not beneficial at end of life, it continues to be prescribed and administered routinely.

Student: Sara Goins
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Anuradha Ghosh
Title: Surveillance for mosquito species (Culex spp.) and prevalence of West Nile Virus among identified mosquitoes in Southest Kansas

103

Abstract:
West Nile virus (WNV) is the most common mosquito-borne disease in Kansas and the United States. Several species of mosquitoes are responsible for transmission of arboviruses but Culex species are the primary vector for WNV in Kansas and the United States. According to the US Centers for Disease Control and Prevention (CDC), 80 percent of people infected with WNV show no symptoms. But for the remaining 20 percent, symptoms can include headaches, body aches, joint pains, vomiting, diarrhea, or rash. Even less commonly, about one in every 150 people develop serious symptoms affecting the central nervous system, including brain and spinal inflammation. This condition results in death in about 10 percent of those cases. There is currently neither a human vaccine nor a cure for WNV, so the only thing you can do is avoid being bitten by a carrier mosquito. The Kansas Department of Health and Environment (KDHE) announced that Kansas and neighboring states are becoming more and more hospitable to the Culex mosquitoes as average temperatures rise. The KDHE reports that, though there have not yet been any cases of WNV in 2018, from 1999 to 2017 there were 600 cases of the worst form of the disease in Kansas, including 30 deaths. In the KDHE's latest announcement, the agency indicated that, based on historical human cases of the disease, half of the state is at a high risk for WNV infection, while the rest of the state is at a moderate risk.

Student: Kyleigh Grieshaber
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Pulmonary Embolism Prophylactic Treatment

104

Abstract:
Pulmonary Embolism Prophylactic Treatment As a result of deep vein thrombosis (DVT), a pulmonary embolism (PE) can occur which creates a blockage in the body's pulmonary circulation, thus, leading to cell death. PE is the third leading cause of death in the U.S., while being the most common, most preventable cause of death in hospitalized patients. Understanding the signs and symptoms of PE is essential in order to save patients' lives. The objective of this research study was to compare the prophylactic use of Unfractionated Heparin (UFH) and Low Molecular Weight Heparin (LMWH) in patients effected with PE. Information for this research project was gathered using a quantitative systemic review and meta-analysis approach. Data was collected from multiple research studies and combined to identify the best approach for prophylactic treatment of PE. The findings of this study concluded that LMWH is overall more beneficial to patients with PE than UFH for many reasons. Because each dose is based on the patient's weight, LMWH is able to reduce the frequency of lab testing while giving them the ability to have anticoagulation therapy at home, thus, reducing the length of stay in the hospital. Prophylactic use of LMWH in PE patients is able to save the hospital and the patient thousands of dollars a year while consistently preventing and treating this complication.

Student: Sydney Harris
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Use of Workplace Incentive Programs to Increase Health Behaviors in Nurses

105

Abstract:
As the frontline and most visual health promoters in a hospital setting, nurses are to be at the top of their game in terms of their health behaviors. Unfortunately, several studies show that nurses tend to follow the trend of the general population in poor eating habits, physical inactivity, sleep habits, and smoking and alcohol consumption. The purpose of this study is to unveil the benefits of Workplace Health Incentive Programs in an effort to increase the overall health of those who are to be considered role models for a healthy lifestyle, the nurses who hold the seat for the "most trusted professional." For this evidence-based research study, a literature review encompassing five articles was done to explore evidence to support the conclusion of this project. Based on the research, the use Workplace Incentive Programs will result in healthier nurses, increased retention of nurses, better work environments, and increased patient satisfaction and safety. While the health of the general population is slowly declining, it is important that those in roles as positive health promoters are not following the trend of the whole population, and are standing strong in an effort to fight non-communicable diseases, obesity, and physical inactivity. To increase accountability to live a healthy lifestyle, nurses as well as other healthcare workers can participate in Workplace Health Incentive Programs in an effort to have healthier nurses on every floor of every hospital.

Student: Audry Holman
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: The Effect of Exercise on Menopausal Women: A Quantitative Research Critique

106

Abstract:
The purpose of this research is to identify if the negative physical and physiological symptoms of menopause are decreased in menopausal women who exercise compared to menopausal women who do not exercise. There are many negative symptoms of menopause including an increase in waist circumference, hot flashes, and weight gain. Exercise is a non-pharmacological way to decrease some of these symptoms that women experience when going through menopause. Multiple studies show that exercise decreases the risk of osteoporosis, body fat, waist circumference, triglyceride levels, and depressive symptoms in menopausal women. The studies also show that exercise increases quality of life, lumbar bone mineral density, insulin resistance, and quality of sleep of menopausal women. More research is needed to know if exercise in menopausal women decreases the effect of hot flashes.

Student: Kirsten Mitchell
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Implementing Zero/Neutral Displacement IV Connectors to Reduce Blood Stream Infections

107

Abstract:
Catheter related blood stream infections are a major problem in the United States and account for over $225 million each year with over 1,300 infections occurring each day. By researching the most effective type of IV connector, health care providers have the ability to provide the best and safest care possible to patients requiring IV access. Zero/neutral IV connectors may be the answer to decreasing these infections as they produce no reflux in the connector which is a breeding ground for bacteria and occlusions. This literature review found that zero/neutral connectors performed better than positive and negative IV connectors when comparing both reflux and bacterial growth. By implementing zero/neutral connectors into every day practice, over positive and negative connectors, the number of catheter related blood stream infections can be reduced and prevent additional harm to patients.

Student: Tucker Morey
Student Status: Undergraduate
Major: Chemistry
Advisor: Dr. Ram K. Gupta
Title: Metal-doped catalysts for efficient hydrogen evolution reactions

108

Abstract:
The highly efficient electrochemical hydrogen evolution reaction (HER) provides a promising way to solve energy and environment problems. In this work, various transition metals (Fe, Co, Ni, Cu, Ag, and Pt) were selected to support on molybdenum carbides by a simple organic-inorganic precursor carburization process. X-ray diffraction (XRD) analysis results indicated that the ß-M02C phase was formed in all metal-doped samples. X-ray photoelectron spectroscopy analysis indicated that the binding energy of M02+ species (MO2C) shifted to a lower value after metal was doped on the molybdenum carbide surface. Comparing with pure ß- MO2C, the electrocatalytic activity for HER was improved by transition metal doping on the surface. Remarkably, the catalytic activity improvement was more obvious when Pt was doped on molybdenum carbide (2% Pt- MO2C). The 2% Pt- MO2C required a ?_10 of 79 mV, and outperformed that of pure ß- MO2C (?10 = 410 mV) and other transition metal doped molybdenum carbides, with a small Tafel slope (55 mV/dec) and a low onset overpotential (32 mV) in 0.5 M H2SO4. Also, the 2% Pt- MO2C catalyst demonstrated a high stability for the HER in 0.5 M H2SO4. This work highlights a feasible strategy to explore efficient electrocatalysts with low cost via engineering on the composition and nanostructure.

Student: Trey Morgan
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Is the current concussion protocol for student athletes enough?

109

Abstract:
In the world of sports there are bound to be accidents and one of the most common kinds of accidents are concussions. It has been reported that 10-20% of high school student athletes will experience a concussion. The purpose of this study was to examine the current concussion protocol for student athletes and to identify the best practices for a diagnosis and follow-up to decrease the likelihood of any severe brain damage. The methodology was a literature review. Evidence in the literature reported that individual educational plans (IEP) have been shown to be good at helping student athletes get back to their original benchmark test scores. The IEP should focus on lightening the students academic load as this will decrease the risks of presenting symptoms. A teamwork approach and individualized care will help student athletes that have been diagnosed with a concussion get back into the classroom and back onto the field/court.

Student: Payton Moss
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Co-Bedding Preterm Infants in the NICU

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Abstract:
Providing the best possible environment for premature infants continues to be a challenge in the neonatal intensive care unit (NICU). The purpose of this literature review was to examine the evidence related to the care of preterm twins and whether twins benefit from co-bedding verses keeping them separated. Co-bedding is defined as caring for two or more infants in the same incubator and is considered a developmental initiative to minimize adverse effects of preterm birth. Twins share a tight space in utero and support each other as they grow. Skin-to-skin contact with preterm infants and their mothers has been shown to increase the healing time and lead to better outcomes as shown in other studies. The five studies that were examined observed for improvements in self-regulation, quality of sleep, response to pain, weight gain, and safety. Based on the results, co-bedding was found to promote self-regulation, quiet sleep, weight gain, decreased crying, and decreased pain in the twin preterm infants. Co-bedding is a comforting measure for infants that can be implemented without significant adverse effects and is a noninvasive solution to improving overall physiological stability.

Student: Olivia Murdock
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Music Therapy in Preterm Infants in the NICU

111

Abstract:
A neonatal intensive care unit (NICU) provides life-saving care for premature and sick newborns. However, that environment is very stressful due to the noise of equipment, alarms, and constant activity. It is important to decrease the stress for the infant as well as the parents. The purpose of this literature review was to determine if there is benefit from the use of music in the NICU. The high level of stress and anxiety that parents experience during this time may put the parent/child relationship at risk. Overstimulation and ongoing noise in the NICU may delay improvement in health and increase stress. Studies examined if adding music therapy (MT) during daily care reduced infant and parental stress and had an effect on physiological outcomes of the infants and their families. Primary study methods included a control group and an intervention group. The infants in the intervention group were exposed to music of the parents' choosing. During the therapy, the infant was connected to a pulse oximeter to monitor oxygen level and a monitor to assess heart rate and respiratory rate. The researchers reported significant outcomes. The overall average infant heart rate was reduced, there was in increase in oxygenation, and more stable breathing patterns. Because of these improvements, infants expended less calories and hospital stays were shorter. Parents of the infants also verbalized feeling less stressed and more relaxed. The studies provided evidence that music therapy was beneficial to the newborns and parents in the NICU.

Student: Chelsea Poell
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Increasing Hepatitis C Infection Related To Growing Opioid Epidemic

112

Abstract:
Hepatitis C (HCV) is rapidly growing and has become the most common blood-borne infection throughout the United States. The objective of this study was to compare trends in rates of injection drug use (IDU), specifically opioid injection, with national trends in the incidence of acute HCV infection to assess whether these events correlated over time. The methodology was a literature review. To test for trends researchers calculated the annual incidence rate, demographics, and risk characteristics of reported cases of acute HCV infection using surveillance data from 2004 to 2014. They also analyzed the annual percentage of admissions to substance use disorder treatment facilities reporting injection drug use for the same time period by type of drug injected and demographic characteristics. Using the six sources, the results showed that significant increases in opioid injection mirrored those for reported cases of acute HCV infection among demographic subgroups. Injection drug use was the primary risk factor for HCV transmission and the leading cause of incidence in the U.S. Interventions were identified to help end the "opioid epidemic", which then in return would reduce positive cases of HCV infections.

Student: Jayden Rusher
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Critical Care Nurses at Higher Risk of Burnout

113

Abstract:
In practice today, units with high intensity, stress, and patient needs are being burnt-out quickly due to patients' intense needs, uncertain outcomes, and the ongoing witnessing of suffering and death. The purpose of this paper is to determine if there is a significant relationship between critical care units, and a high risk of nurses who work on those units exhibiting more characteristics of burnout. The study was done to gauge burnout, strength, and prevalence of moral distress, differentiated moral distress from day-to-day stressors, and determine fortitude and other aspects indicative of resilience. There was a cross-sectional survey model to test the exposure of a high-stress nursing unit. Data from nurses completing six surveys and a sociodemographic data sheet was analyzed and summarized by a software. The methods hospitals are trying are multidimensional, but nurses are finding support strategies to reduce their fatigue, which is a better factor in nurse retention. The results proved the hypothesis to be true; there is a direct correlation between critical care units and a high risk of nurses who work on those units exhibiting more characteristics of burn out. Overall, nurses are feeling low levels of personal accomplishment and if this problem keeps occurring then there will be even more difficulty within high intensity units.

Student: Marissa Thompson
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: Neonatal Abstinence Syndrome

114

Abstract:
Neonatal abstinence syndrome (NAS) is becoming more and more prevalent today. The number of women who are using narcotics while they are pregnant continues to rise. Neonatal abstinence syndrome may occur when a pregnant woman takes narcotics that cross the placenta to the fetus. The fetus then becomes dependent on the drug. When the infant is born, they are no longer receiving the drug. A large percent of these infants will go on to develop withdrawal signs and symptoms after birth. Since there has been no consistency in providing specific standardized care for treating infants with NAS, the purpose of this literature review was to explore if any studies provided evidence of the best standards of care for these infants. Studies have shown that when implementing guidelines and protocols for neonatal abstinence syndrome, the length of pharmacological therapy and the length of stay in the hospital are both decreased. Communication among healthcare workers, as well as having a committee who comes together to see what is effective or not with the care of these infants have been shown to be positive influences in standardizing the care. Standardizing the care also helps with identifying infants with NAS sooner and helps guide their treatment by using the Finnegan NAS scoring system. Improvements in identification and care will lead to better outcomes and shorter lengths of hospitalization.

Student: Trenton Tucker
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey
Title: The Use of Turn Assistance Features on Hospital Beds for Prevention of Caregiver Injury

115

Abstract:
In the world of nursing, caregiver injury is still a major problem. It has been reported that 44% of healthcare workers have lower back musculoskeletal pain. The purpose of this study was to examine ways to decrease injury to care providers. The methodology was a literature review focusing on turn assist technology. Education alone cannot always prevent a musculoskeletal injury, and thus the use of turn assistance features on beds is implemented. These turning functions have shown great success in helping prevent caregiver muscle strain, and in helping decrease caregiver injury. As general technology has increased, so has medical technology including hospital beds. There are many different hospital beds in use, and many have several functions. The evidence from the literature found the turn-assist function provided positive results in decreasing overall force needed to turn a patient and therefore helping prevent caregiver injury

Student: Brody Wild
Student Status: Undergraduate
Major: Nursing
Advisor: Dr. Barbara McClaskey

116

Title: Stop the Potential Killer: Prevention of Methicillin-Resistant Staphylococcus Aureus (MRSA)

Abstract:
The risk for hospital-acquired methicillin-resistant staphylococcus aureus (MRSA) infections in the ICU is great considering the length of stay and the invasive procedures most patients go through. MRSA infections may lead to death and contribute greatly to the cost of care. The purpose of this study was to examine the evidence for the best possible means of preventing MRSA. The methodology was a review of the current research. Some of the measures that were found to be beneficial included daily bathing with chlorhexidine, environmental decontamination, MRSA screenings upon admission, isolation precautions for positive patients, eradication therapy, and strict hand hygiene. Conclusions indicate that hospital acquired MRSA infections can be decreased with strict adherence to the correct regimen and continuous, hospital-wide education and awareness.

Student: Laura Anderson
High School: Joplin High School
Advisor: Ms. Karisa Boyer
Title: Bacterial Resistance to Minocycline and Erythromycin in Cutibacterium acnes

117

Abstract:
Acne vulgaris is a skin condition that leads to painful inflammations on the skin. Cutibacterium acnes is the bacterium that is most commonly linked to this condition. It has been linked to antibiotic resistance because treatments seem to work less over time. Two common treatments for acne vulgaris are erythromycin and minocycline. The goal of this project was to discover if Cutibacterium acnes develops resistance to erythromycin and minocycline over successive generations. In order to test this, C. acnes was swabbed onto Trypticase Soy Agar plates and treated with either minocycline or erythromycin. Bacteria was then swabbed from around the zones of inhibition and placed into broth to grow. The new sample of bacteria was then swabbed onto agar and treated with either minocycline or erythromycin. This was repeated once more. Zones of inhibition were measured and documented throughout this process. I found that zones of inhibition decreased in size in the second generation of minocycline-treated plates, showing evidence of resistance to minocycline. In the erythromycin-treated plates, there were very small zones of inhibition in the first generation and no zones of inhibition in the second generation. This also showed evidence of resistance to erythromycin. Two sample t-tests and ANOVA tests were performed to determine the significance of the results. These tests found that the results were statistically significant, and did not occur due to confounding variables. Cutibacterium acnes showed resistance to minocycline and erythromycin, which may help explain why those common acne treatments seem to work less over time.

Student: Abigail Ashenfelter
Presenting Group Members: Callie Ashenfelter and Jenna Ostrosky
High School: Fredonia High School
Advisor: Ms. Tara Yarnell
Title: Women in Fairy Tales in America and Around the World

118

Abstract:
Fairy tales: everyone has probably heard one in their lifetime. In them, there is a woman that needs to be saved and a prince that comes in and saves the princess and they live happily ever after. This project explores how female characters were interpreted in fairytales and how fairytales are changed around the world. It examines the characterization as women as the victim in need of a savior, as they are frequently the victims in the tales, rescued by a male. By examining the characterization of the female characters especially, much can be learned about the culture and belief of the society telling the story. The fairytales that we explored are Rapunzel, Cinderella, Snow White, Sleeping Beauty, and Bluebeard. Not all fairy tales are the same. Many tales such as Cinderella, Rapunzel, and the Princess and the Frog are not told the same way in different counties. The fairy tales are influenced by the differing culture around the world; some of the tales do not even end up with a prince as of most American tales do. This project also examines the differences among the same stories that are told in different regions and countries. The differences are examined from a cultural perspective to learn what aspects of the tale that different cultural traits affect the most significantly and what can be learned about each tale's culture and beliefs.

Student: Krusha Bhakta
High School: Joplin High School
Advisor: Ms. Karisa Boyer
Title: Effect of Erythromycin on Infantile Hypertrophic Pyloric Stenosis

119

Abstract:
Infantile Hypertrophic Pyloric Stenosis is a condition that occurs in newborns from 0-6 months of age. Food is restricted from passing through the pylorus causing the obstruction of the gastrointestinal tract, ultimately leading to life-threatening symptoms such as severe dehydration and projectile vomiting. The etiology of the condition remains unknown. However, a possible cause is attributed to the commonly prescribed antibiotic erythromycin. This study was performed to see whether or not direct exposure to erythromycin can be linked to the thickening of the pylorus. A sample of fetal stomach and intestinal tissue was cultured and exposed to concentrations of erythromycin at 50 µg/ml, 100 µg/ml, and 300 µg/ml. The rate of cell proliferation was measured for each sample. Results showed, in all concentrations, that the erythromycin had no significant effect on cell growth.

Student: Cecil Brines
High School: Fredonia High School
Advisor: Ms. Tara Yarnell
Title: Characters: Their Traits and Impact on Society in Fantasy Literature

120

Abstract:
Character roles are an important part of any story and are defined in several ways. In fantasy literature, character roles are of even greater importance, and by understanding a character's motives and goals readers are put in the situation of interpreting how the author intended the reader to be affected or what the reader was supposed to take away from a story. This project seeks to help the common reader understand these roles and will help clarify how they fit into a story. One can identify a character type or trope in several different ways. Each character can also occupy several different roles and serve to accomplish several different outcomes for the reader. Some characters remain static while others are dynamic, changing in ways that may lead the reader to change as well. Some characters reflect a society's culture and belief system, especially their beliefs about the treatment of females and minorities as well as how "others" are established. By introducing certain characters an author can help his readers understand empathy which reduces negative stereotyping and discrimination in society. By doing this each character in a fantasy story has a uniquely different impact on the story, as well as the reader's world as a whole. After examining and defining the various character traits and tropes, examples from popular books are given to let the reader have practice identifying, applying, and comparing the various character types and tropes listed.

Student: Augusta Browning
High School: Prairie View High School
Advisor: Ms. Christy Nickelson
Title: The Effects of Culture of Honor from the Foundations of America Today

121

Abstract:
Evidence shows that crime and gang violence are higher in the Southern states than in the Northern. The purpose of my research is to show that Culture of Honor is still having an effect on lives in the United States today. Culture of Honor was prominent in the South when America was founded due to immigrants and their home lives.

Student: Grace Ipsen
High School: Joplin High School
Advisor: Ms. Karisa Boyer
Title: The Effects of Different Natural Treatments on Periodontal Disease Linked to Aggregatibacter actinomycetemcomitans

122

Abstract:
Periodontal disease affects 20-50% of the global population (Nazir, 2018). It is an inflammatory condition of the gum and bone that surrounds the teeth that causes bone and tooth loss. Over time the bacteria can enter your bloodstream through the gum tissue and affect the heart, lungs, and other parts of your body. There are several different types of bacteria that cause periodontal disease but Aggregatibacter actinomycetemcomitans (A. actinomycetemcomitans) is one of the main causes. In this experiment agar plates were swabbed with A. actinomycetemcomitans and grew in anaerobic conditions. They were treated with vitamin C, guava leaf extract, lemongrass oil, and chlorhexidine to determine which treatment would kill the most bacteria. It was hypothesized that the natural treatments would kill more of the bacteria than the common medical treatment, chlorhexidine. The zones of inhibition were then measured. The lemongrass oil inhibited the most growth and all of the p values were statistically significant.

Student: Grace Nielson
High School: Joplin High School
Advisor: Ms. Karisa Boyer
Title: The Effect of Social Media Withdrawal on Anxiety and Sleeping Patterns

123

Abstract:
The average teenager spends roughly eight hours a day on his/her cell phone, at least two of which are devoted to social media (Office of Adolescent Health, 2018). As extreme usage of social media becomes a societal norm, we see the rise in two major problems amongst teenagers: anxiety and poor sleeping patterns. The purpose of my study is to assess and determine how changes in social media usage affect anxiety levels and sleeping patterns. Those who volunteered participated in a sixteen-day study during which incremental decreases in social media usage were implemented as they self-evaluated their sleep and anxiety through a series of quantitative surveys and inventories. The results of this study show that there is no significant correlation between social media usage and anxiety. However, it did yield a significant correlation between anxiety and sleeping patterns. This means that as sleeping patterns improve, anxiety levels decrease. However, decreasing social media usage will not produce same results.

Student: Samuel Peterson
High School: Joplin High School
Advisor: Ms. Karisa Boyer
Title: The Effect of Community Versus Isolated Setting on Stress in Lab Mice

124

Abstract:
Some research on lab mice places them in isolation for testing, while other research places them in communal settings. Using corticosterone EIA assay testing, this study analyzed the impact of these settings on stress. This study asked the question: What is the effect of isolation vs community setting on physiological measurements of stress in lab mice? In this experiment, 38 mice were tested with 19 kept in groups and the remaining 19 kept in isolation. The mice were for a four week period in healthy environmental conditions with access to food, shelter, bedding, and an appropriate light-dark cycle. Weight was recorded every other day while corticosterone concentration was determined at the end of the four week period. Weight did not vary significantly between the two testing groups. Corticosterone concentrations were distinct showing higher levels of stress in mice from group settings. This was statistically significant (P-value 0.000114).

Student: Mohammad Rahiyan
High School: Joplin High School
Advisor: Ms. Karisa Boyer
Title: The Effect of Azospirillum brasilense and Endo-Mycorrhizae on Degraded Soil to Restore Fertility

125

Abstract:
Soil degradation over the past few decades has become a global issue requiring an innovative solution (Wang, 2018). In this research project, one possible solution was tested. This study asked the question: What are the effects of Azospirillum brasilense (bacteria) and Endo-Mycorrhizae (fungus) on restoring degraded soil fertility? The experiment included four groups each given 20 pots of soil that had been sterilized in an autoclave to model degraded soil. While the first two groups were given Azospirillum brasilense and Endo-Mycorrhizae separately, the third group received both. The final group received neither, acting as the control group. All four groups received three Solanum lycopersicum var. cerasiforme (cherry tomato seeds) and the plant height was recorded every other day. In order to test the treatments ability to restore soil fertility, factors such as nitrogen, phosphorus, pH, and potassium levels were measured. The results of the study were not aligned with the hypotheses made with several measurements being insignificant. When compared to the control improvements were made in all the groups for potassium, nitrogen levels improving for the bacterial group, pH levels improving for the fungi and bacterial group, and phosphorus levels improving for the bacteria and fungi & bacteria group. The ANOVA test revealed that plant height with of p-value of 0.8402 was not significant but factors such as potassium, phosphorus, pH, and nitrogen levels were significant.

Student: Nick Robinett
Presenting Group Member: Camyrn Bollinger
High School: Prairie View High School
Advisor: Ms. Christy Nickelson
Title: The Evolution of Technological Advances and How They Affect the World

126

Abstract:
There is no refuting the fact that today most people rely on computerized technologies. As of January of 2019, there were over 4,388 million active internet users (Statista, 2019). The evolution of technology has not only changed everyday life but has also sparked changes in industries across the world. An abundance of jobs is born from our technological revolution spanning from simple manual jobs, to engineering, and even to the fine arts. There is not one industry that has not been affected by technology, and there is not one person who has not seen technology's adverse effects on our world. The purpose of our research is to reveal the effects of technology's development on the industry, the people, and the world around us.

Student: Savana Quinn Smith
High School: Joplin High School
Advisor: Ms. Karisa Boyer
Title: The Effect of Antibiotic and Natural Treatments on Bacterial Meningitis Linked to Escherichia coli

127

Abstract:
Bacterial meningitis affects many infants around the world. If left untreated, it can lead to irreversible damage or even death. Antibiotics are used to treat bacterial meningitis, but other natural products have been proven to treat bacterial meningitis due to their antibacterial properties. This experiment was performed to see if natural treatments or antibiotics effectively kill the most Escherichia coli (E. coli) bacteria linked to causing bacterial meningitis. It was hypothesized that the antibiotic, Cefotaxime sodium, would kill more bacteria than Garlic and Chlorella. Agar plates were swabbed with E. coli and the bacteria grew in the presence of the three treatments. The zones of inhibition were measured daily for each treatment. Results indicated that Cefotaxime sodium inhibited the most bacteria growth and the results were statistically significant.

Student: Brooklyn Thomasson
High School: Prairie View High School
Advisor: Ms. Christy Nickelson
Title: Opportunities Within Climate Change

128

Abstract:
In the book The Outliers, one of the chapters introduces the opportunity of Bill Gates and how his year of birth made the perfect opportunity for him to excel in computer programming. In my research, I will not be explaining the perfect birthdate for a specific occupation, but what I think will be the next big opportunity that will arise for my generation. I believe climate change will be a big aspect of our lives in the next twenty years and therefore, within climate change, many opportunities will exist. Those who take these opportunities will find success in thinking of ways to combat climate change as well as how to use this catastrophic event for profit. I believe there will be a high demand for scientists in the environmental field that will need to research solutions to climate change because if we do not find solutions, then earth will be permanently damaged beyond repair. In my research, I will explain why climate change will affect us and why climate change will provide the best opportunities for success for my generation.

Student: Dominic Victor
High School: Prairie View High School
Advisor: Ms. Christy Nickelson
Title: An Analysis of the Current State of Gender Opportunity: The Gender Scale Swings

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Abstract:
In the heat of the Civil Rights Movement in the 1960s, the second-wave feminist movement was also ramping up. The first-wave feminist movement in the '20s was a matter of legal equality -- the second wave was a matter of social reform and equality. The second-wave helped eradicate discrimination based on gender and level the playing-field in terms of opportunity. It seemed that America would finally reach its goal of equality for all, until the feminist movement continued to push with its third and fourth movement, 1990s and 2010s, respectively. These movements drastically swung the balance scales the other way. The purpose of this research is to show the diminishing opportunities for men and the repercussions of leaving our men behind.

Student: Phoebe Watson
High School: Joplin High School
Advisor: Ms. Karisa Boyer
Title: Effect of Treatment on Beneficial Intestinal Microbiota and Clostridiodes difficile in Ulerative Colitis Patients

130

Abstract:
Currently, there are no widely known alternatives to harsh oral antibiotics used to treat Ulcerative Colitis (UC). Even then, treatment is minimal and there is no cure for the disease. One causation of the disease is the under-development of the intestinal microbiota in children. This experiment used the agar disc diffusion method and tested the ability of two different herbal treatments: frankincense essential oil, turmeric essential oil, and one anti-biotic, vancomycin. The goal was to inhibit the growth of Clostridioides dif-ficile, the bacterium traced to causing ulcers in UC patients and Bifidobac-terium longum, is a common beneficial bacterium found in the gut. I hy-pothesized that if I treated B. longum and C. difficile with the three treat-ments, then vancomycin would inhibit the most growth. Results indicated that, while the essential oils did not kill either bacteria, vancomycin effec-tively killed both C. difficile and B. longum.

Student: Bayley Winters
High School: Prairie View High School
Advisor: Ms. Christy Nickelson
Title: The Comparison of Parenting Styles in Correlation to a Child's Academic and Personal Success

131

Abstract:
Every family has a different type of parenting style. This research provides the public with information on the various methods of parenting and how they affect children. The research was obtained from two Junior and Senior students at Prairie View High School who had a 4.0 GPA. I conducted research on the parenting styles, family life, education, involvement, opportunities and future aspirations of the subjects. I compared the research I obtained to that of other sources to acquire evidence that both supported and did not support my findings. I found that every subject had been raised with the ideas from similar parenting styles. There were similarities to each subject as there were differences; however, they were not drastic. In conclusion, parenting styles have a great effect on a child's success, both academically and personally.

Student: Peyton Wood
High School: Fredonia High School
Advisor: Ms. Tara Yarnell
Title: Did Superheros Change the World or Did the World Change Superheros?

132

Abstract:
This project explores the changes in superheroes throughout the years. Superheroes made their first appearance in 1936 and have been around for the past 82 years. This project shows and explains specific differences in attire, physique, and abilities. Our inspiration developed through our childhoods, as we both love superheroes and we both have a fascination with the idea of someone being able to fight off evil with superpowers. As we researched we noticed the changes that illustrators made to make superheroes look modern. There were changes being made as to what happened to characters and rules that were being made with all these changes. As the superheroes changed, so did the villains. In the beginning, illustrators depicted villains with a look of otherworldly creatures. These creatures had bumps, horns, unnatural skin color, and other inhuman traits that characterized their evilness. Now we know that anyone could be evil, and many monsters are in fact, humans. Because of this today the villains are sometimes illustrated as humans who use their power or smarts for evil. As we look into these changes we discuss why some of the changes were made and how society, the authors, or readers shaped these changes. We have looked at books and articles from 1994 to 2014 and examined both major comic books, Marvel and DC. So, after researching all of the changes we asked ourselves: did superheroes change the world or did the world change superheroes?

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Colloquium