

Spring 2017 Capstone Abstracts

Accounting: The Basics and an Application

Alexandria Slayers (Lee Kersting)

My honors capstone was meant to prepare me for the business world. To this end, I helped a professor in his creation of a cost accounting system. This involved working hand in hand with a local company in addition to working independently. Over the summer, I assisted on the costing system, but for the last two semesters I have focused my efforts on being able to convey accounting, specifically cost accounting, to an audience with no experience of the subject. In order to do this I created a paper that discusses these subjects and defines the key terms related to this project. This involved a lot of reading and research. Additionally it required a lot of reframing of previous knowledge. This paper can serve to either explain my project or refresh the reader on the subject of accounting. The project as a whole allowed me to expand my experience in multiple ways and makes me a more valuable employee and well-rounded person.

A Cross-Cultural Analysis of Perceived Impacts on the Environment

Laura Murrell (Douglas Hume)

This project examines how two cultures view their impacts on the environment. Ethnographic data were collected from rural farming villages in Orange Walk District, Belize, and from rural farming communities in northern Kentucky, United States. This research reveals how these cultures perceive environmental problems, how environmental problems affect them, and how they influence the natural world. Analysis revealed that there were cases in both northern Kentucky and northern Belize to suggest that concern and recognition of environmental impacts were most common when the environmental problem impacted a community itself. In Kentucky, only the farmers considered themselves to have an impact on the spread of invasive species, which is due to the farmers combating them. In Belize, participants reported the most impact and were most concerned about pollution because it exasperated the spread of mosquito-borne illnesses and threatened air quality in the community. It was also found that participants perceived an impact on an environmental problem only if they first reported being concerned about that problem.

The Effects of Chronic Taurine Exposure in C57BL/6S Mice: A Dose Response Study

Jamie Weimer (Christine Curran)

Energy drinks are a \$49.9 billion dollar industry with the highest consumption seen in adolescents and young adults. Taurine is an abundant free amino acid in the central nervous system in mammals and a top ingredient in energy drinks. Our previous studies have shown that taurine impairs non-spatial learning and memory, sex dependently impacts spatial learning and memory and sex dependently alters reactions to caffeine. It has also been demonstrated that when combined with energy drinks, alcohol consumption increases in young adult social drinkers. This study utilized male and female B57BL/6J mice and two doses of taurine (0.06% and 0.12%) administered in drinking water. Taurine treated mice exhibited deficits in non-spatial learning and memory, decreased social preference and an attenuated reaction to caffeine. Males treated with 0.12% taurine experience improved spatial learning and memory, while females of the same dose experienced deficits. Taurine treated males consumed less alcohol than controls while taurine treated females consumed more alcohol than controls. No significant effects were seen for anxiety or social recognition.

Empowering Youth Experiencing Homelessness

Lillian O'Bryan (Belle Zembrodt)

My capstone project was a culmination of both extensive research and hands-on experience(s) focused on the topic of youth experiencing homelessness. This capstone project was inspired by work I completed with a nonprofit organization called UpSpring and from this work, my drive to help fight childhood homelessness became a true passion. My capstone allowed me the opportunity to both understand the statistics and current research on homelessness, while also gaining knowledge on how to build resilience and self-confidence in youth experiencing homelessness. This capstone significantly impacted my life; it taught me how to be an empathetic individual and gave me the ability to see how life from others' perspective.

The Sounds that Shape Us

Maggie Fulmer (Ali Godel)

'The Sounds That Shape Us' is a project that explores the musical world in Cincinnati in a creative and analytical way. Through this project, I was able to connect to the city and enhance my writing and storytelling abilities. As a journalism student, I value blogging as a platform that allows aspiring writers to put their work out there - and that is why I wanted to create a blog. The majority of the website focuses on pieces that I wrote surrounding the music world in Cincinnati, but it also highlights important work that I read by others on similar topics. I hope that 'The Sounds That Shape Us' shows others why I value the music world in Cincinnati so much and why they should to. I also hope that it helps to solidify the fact that blogging can be a legitimate form of writing. I grew immensely as a writer while working on this project and I learned a lot about my ability to create something really unique.

Reclaiming the Narrative: Understanding my LGBT Identity through Personal Essay

Nicholas Snider (Jessica Hindman)

Stories have the ability to create bridges between diverse people, educate about personal identities, and help individuals process difficult events. During this project, I turned events from my life that were connected with my identity as a gay man into Creative Nonfiction essays. The narratives dealt with a variety of themes, which included trying to understand my identity without role models, the AIDS epidemic, unlearning fear and shame, and what healthy expressions of sexuality look like. My writing was informed by a variety of memoirists, poets, and short-story writers, whose work I studied throughout my capstone. Ultimately, I completed three essays. The results of my capstone were a greater understanding of my own life and identity, a stronger ability to educate others about what it means to be an LGBT individual, and a portfolio of work that I can use to apply for graduate school programs.

Gender Differences in Body Image Issues in College Students

Sabrina Harral (Jacqueline Emerine)

The purpose of this project was to bring about awareness of disordered eating, inform students of gender differences, and to ensure students know where to find available resources. Students were privately interviewed about body image issues, and research was conducted using Stealy Library and its related resources. The research conducted in this project served as the foundation of a campus wide public awareness campaign about body image issues, and how those issues impact men and women differently. Results showed that men and women talk about the body differently, and therefore related issues should be discussed in different ways for each group.

Equine Assisted Therapy May Offer Physical and Cognitive Benefits

Shelby Russell (Belle Zembrodt)

Driven by my love for horses and inspired by my brother, Aaron, who has Down Syndrome, I chose to study the benefits of equine assisted therapy (EAT). Although Aaron never participated in EAT, I believe

it could have catalyzed his development more so than traditional therapies. I volunteered at Milestones, a non-profit EAT facility, conducted interviews with parents of a Milestones rider and the instructor, and compared my experiences to literature research. While I had a previous understanding of the physical benefits provided by EAT, this project brought to my attention the numerous cognitive, behavioral, and emotional benefits that EAT can foster. Physical benefits include improved motor function and trunk control. EAT can also provide individuals with improved communication, decreased ADHD symptoms, and rehabilitation from substance misuse. More research must be done in this field to further discover benefits and help integrate EAT into traditional therapy regimens. In the future, I hope to study how EAT can help decrease dependency on medications with a high potential for abuse, such as ADHD medications.

To Save a Party: The Story of Garfield and His Assassin

William Bargett (Jonathan Reynolds)

To Save A Party: The Story of President Garfield and His Assassin is play with a companion research paper detailing the lives and deaths of President James Garfield, 20th President of the United States, and Charles Guiteau, a man whose mental illness drove him to assassinate the President. This topic was chosen to highlight a piece of American History that is often forgotten in comparison to similar events, such as Lincoln or Kennedy's assassinations. The play follows a historically accurate timeline of these two men as they established themselves, shows the similarities and differences between them, and briefly examines why one would kill the other. It contains a great number of direct quotations from the historic figures mentioned, converted to dialogue in this one act play. The research paper establishes the author's credibility as a historian on the subject, and takes an academic approach to the topic, covering facts that may not have made it into the play.

The Madam: Women Who Traffic Women

Nathalia Garcia Brooks (Belle Zembrodt)

My project consists of a research paper looking into the Madam- women who recruit other women into sex trafficking. I spent one whole semester on the research and writing the paper, and the second semester I did an internship with an anti-human trafficking program. There, I got to interact with survivors of human trafficking and hear some of their stories. I got to interview my supervisor and a local law enforcement whom have both encountered cases where the victim was trafficked by a female. I used my experience at the internship to confirm some of hypothesis and ideas I had on human trafficking.

From Fort Thomas to Port Elizabeth: International Pen Pals Help Students Become Global Citizens

Katherine Gandenberger (David Childs)

My project, entitled "From Fort Thomas to Port Elizabeth: International pen pals help students become global citizens" was largely inspired by my desire to share my study abroad experience with my students. Even before my country placement for international student teaching was finalized, I was trying to devise a way to actively involve my students in an educational activity pertaining to the country I would be placed in. I chose to implement a pen-pal program between my students in Fort Thomas and the class I was placed with in Port Elizabeth, South Africa. Through this project, students would develop their writing skills, learn about editing and revising, and would be introduced to many geography and social studies concepts. In writing to a real child across the globe, each student would have the opportunity to read about their pen pal's real-world experiences, and ask questions about what they wanted to know. The end result was an incredibly positive educational experience, for both groups of children. They were engaged, enthusiastic, and curious about the things they were learning about their

pen pal's culture. I believe there was a huge educational benefit, and I definitely see myself implementing this sort of project again in the future.

Personal Portfolio

Jen McMahon (Nick Brummer)

My capstone project demonstrates both technical knowledge and artistic expression. In order to complete the assignment I had to learn and refine many techniques. With the help of my mentor, I created an animation, a 3-dimensional model, and a motion graphic. These miniature projects helped to further highlight my personal style and abilities. The larger section of my project was the creation of a personalized webpage. This webpage caused me to examine my personal brand and to translate that into a navigable site. The combination of these projects resulted in a website that is both an online resume and a work of art in and of itself. This project expresses both my practical and artistic sides, which will help me in my chosen field.

Reconciling Technology with Nature

Corey Shrader (Timothy McCord)

My capstone project, entitled, "Reconciling Technology with Nature", is a creative, research, and service learning project that draws interdisciplinary connections between computer science and environmental science. I wanted to find some way to apply my programming skills to a project increasing sustainability in the Cincinnati area. One of my professors directed me to Green Umbrella, a regional sustainability nonprofit. Throughout the year, I attended various meetings with members of the GU Watershed Action Team and helped them with three distinct IT-related projects in their backlog. The first of these projects was Streambank, an online database for ecologists and citizens to contribute and digest Cincinnati water quality data. Another project I worked on was creating an interactive, crowdsourced map of green infrastructure around the city. Finally, I used a complex statistical method to help a retired UC professor quantify and visualize the effect of land use on water quality in Cincinnati. The documentation for the project is similar to an artist's statement and illustrates my journey in working with Green Umbrella on these projects and their eventual outcome.

Diagnosing Student Learning Errors through Classification

Aubrey Franzen (Richard Fox)

Students often have misconceptions about material they are learning. Without proper teacher feedback, such misconceptions may go uncorrected until the student takes an exam. However, with ever-increasing class sizes and other duties, university faculty may struggle to provide useful feedback to pinpoint student misconceptions. Tools that can help students identify their own learning errors could be invaluable. Using Artificial Intelligence, such a tool could be administered with little to no intervention by the teacher. This research reports on a tool that allows a teacher to develop test questions that can help pinpoint types of errors using an approach called hierarchical classification.

Automated Music Recognition Using Pattern Recognition in AI

Lauren Hensley (Richard Fox)

One type of recognition problem that humans are quite successful at is trying to identify a song. When listening to a piece of music, the human ear is often able to determine the song by name in just listening to a short excerpt. Sometimes humans recognize the song based solely on the lyrics but other times through the melody. To perform music recognition by computer, an algorithm will need to compare the target song to other, known songs and look for a match. How closely do the songs have to match and how should that match be performed? These are the questions that this research addresses. Specifically, the approach taken here is to view a song as a sequence of notes with pitch and duration specified and

use a variation of the traditional spell-checking algorithm to determine how closely the song matches against a list of known songs. This paper considers various forms of recognition algorithms used in artificial intelligence, suggesting their strengths or weaknesses with respect to music recognition and then focuses on the “spell checking” approach. Some encouraging test results will be provided.

The Generation of Life- A Study of Millennials and End-of- Life Care

Austin Alley (Zachary Hart)

Little to no awareness of the importance of hospice care and other end-of-life services exists among much of American society, but is most prevalent in the millennial generation. Several reasons may explain why this gap of awareness and involvement exists among millennials, such as their lack of influence from institutional faiths, a more digital approach to communication, and simply not having an understanding of medical and legal approaches to end-of-life care. This capstone project examines the factors that widen this communication gap while also highlighting *why* it is so important that solutions to this crucial problem are created. In addition to the aforementioned objectives, this capstone also offers five key recommendations for a public relations campaign designed to improve communication and engagement between millennials and hospice care providers. These five recommendations include a social media initiative, a feature story, a press release, and print advertisement, and a digitally placed video. Both the background research and the public relations recommendations seek to improve communication between these two parties, and, therefore, improve the quality of life at the end of life for those in the community.

"But isn't that just for kids?": Digging Deeper into the Young Adult Genre

Hayley Kirley (John Alberti)

My capstone is a series of writings about young adult fiction. Each set of writings focuses on a different young adult series that had an impact on myself as a younger reader. The four series I wrote about were; *The Hunger Games* series, the *Shiver* trilogy, the *Shatter Me* series, and *The Raven Cycle* series. For each series, I wrote an academic essay, a personal essay which re-examines my initial response to the series, and then a piece of short fiction that takes place within the world of the series. This project attempted to validate young adult fiction as a genre as well as myself as a reader and writer.

Using Dance to Mourn the Creation of Racial Categories in the United States

Emanuel Picazo (Joan Ferrante)

The U.S. has divided his residents into racial categories (e.g., Black, White, Native American) since Jamestown (1607). Sociologists and other scientists have shown that racial categories are not natural divisions of humanity, even though we have learned to see them as such. Categories were built on dynamics of separation and loss that came at profound cost to family members/structures. Dance is one way to convey the meaning and effects of this complex history. My capstone project demonstrates innovative movement ideas, supported by original music composition, to convey, not only the dynamics of separation and loss, but also the wrenching emotion caused by the concept of race.

Attitudes of NKU Students towards Mathematics

Kristen Ghouse (Bethany Noblitt)

It seems common for people to have a negative opinion about mathematics. Often, when confronted with something mathematical, people say something like, “I just can’t do math.” This project examined NKU students’ attitudes towards mathematics. A survey was given to 225 NKU students currently enrolled in a mathematics course in the Spring 2017 Semester (courses included 100 –, 200 –, and 300 – level courses). The survey asked students to choose whether they described themselves as having a positive or negative attitude towards mathematics and to describe the factors that they perceived to

have contributed to their current math attitude. Much of the literature that has been published on the subject focuses on negative math attitudes and common factors that lead to this negative attitude, but lacks research on what contributes to positive math attitudes. The results of this project extend the literature by providing qualitative information on positive attitudes, not just the negative, and descriptions of specific contributing factors.

Judgements about Advertisements

Miranda Lewis (Douglas Krull)

Priming mortality salience in research has consumer implication. More specifically, research was conducted that found mortality salient participants show a higher preference for luxury items. The goal of the current study was to investigate whether this preference held was moderated among highly religious participants who act differently than non-religious counterparts. A study administered online measured preference for luxury brands using a series of advertisements in both a mortality salient condition and a control condition. The study failed to replicate past findings of higher preference for luxury brands among mortality salient participants making it impractical to apply religious hypotheses. Possible methodological reasons for this are discussed.

A Lesson in Loss

Nicole Norman (Rachel Banks)

A Lesson in Loss is a collaborative art project documenting the things that people lose. A Lesson in Loss is broken up into two sections: My loss is a series of journal entries written by Nicole Norman. They are documented on the website, alessoninloss.net, but have been left behind in public spaces, waiting to be found by someone else. By intentionally losing these artifacts, the artist gains something even better - your loss. Your loss is a collection of submissions from individuals everywhere. Submissions can take any form (text, photo, stories, etc.). By merging the perspective of the artist and the audience, a lesson in loss creates one universal story about how loss affects us all.

Patient Rights: Bridging the Gap between Health Professionals and their Patients

Kaitlin Dyer (Carl Miller)

In this project we examined the status of patient rights within the field of medical ethics, specifically focusing on rights relating to end-of-life decision making. This is a challenging topic within the medical field, especially when the patient's cognitive abilities have declined to the point that the patient is no longer capable of making informed decisions for himself or herself. Our primary objectives were: 1.) To discover the current level of knowledge about end-of-life decision making within a college-age student population and within a nursing student population, 2.) To discover if either study group wanted more information on these topics, and 3.) To determine comfort level with discussing these topics within the two groups. To answer our research questions, we surveyed two groups: an NKU Master's level nursing student class from a variety of medical specialties and a selection of Foundation of Knowledge (FOK) course students from a variety of general education mathematical sciences courses.

Reducing Prejudice among Transgender Individuals Using Imagined Contact

Molly Hartig (Angela Lipsitz)

This study tested the effects of imagined contact on the reduction of prejudice towards transgender individuals. Participants were randomly assigned to imagine either a conversation with a male to female transgender individual or a neutral nature scene. They were then given measures to determine their comfort level with and anxiety towards transgender individuals, as well as a measure of social desirability. We found that those who imagined contact with a transgender individual expressed more

acceptance toward transgender individuals, especially in situations involving less intimate relationships, than those who had imagined a walk through nature.

Discovery of Novel Antimicrobials

Christina Spears (John Carmen)

The rise of multi-drug resistant pathogens has increased the need for novel antimicrobial drugs. Endophytic microbes are a promising, yet understudied source of bioactive compounds. Plants from the Northern Kentucky/Cincinnati area were collected and their endophytic organisms were co-cultured with *Escherichia coli*, *Staphylococcus aureus*, and *Candida albicans* to test their antimicrobial activity. Liquid cultures of active isolates were extracted using ethyl acetate, methanol, or chloroform. Crude extracts were concentrated via evaporation and tested for activity with disk or well diffusion assays. Thirteen plants (*Asimina triloba*, *Asarum canadense*, *Lonicera maackii*, *Asclepias syriaca*, *Lindera benzoin*, *Lonicera japonica*, *Pyrus calleryana*, *Alliaria petiolata*, *Fallopia japonica*, *Viburnum dilatatum*, *Chionanthus retusus*, *Pterostyrax corymbosa*, *Diospyros virginiana*) yielded 121 endophytic organisms of fungus and bacteria. A total of 10 isolates produced antimicrobial compounds (one bacterium from *Asarum canadense*, two bacterium and one fungus from *Asimina triloba*, one bacterium from *Pyrus calleryana*, one bacterium from *Alliaria petiolata*, one bacterium and one fungus from *Diospyros virginiana*, one fungus from *Chionanthus retusus* and one fungus from *Fallopia japonica*). A total of 5 extracts inhibit the growth of *E. coli*, 3 are active against *C. albicans* and 5 are active against *S. aureus*. Further research involves identifying the active compound via column chromatography and TLC.

Dark Souls: Paint by Death

Greg Jones (Alexis Pulos)

Video games are a growing medium for storytelling and characters. They have already created characters that are known worldwide. They have the ability to characterize in ways that are almost unrecognizable when compared to traditional storytelling methods. One game in particular, *Dark Souls 3*, tells the player about its Boss characters purely through the language of games. Through paratextual objects, game mechanics, and environmental details, *Dark Souls 3* creates a rich and gothic cast of Bosses that players will happily die to time and time again. This is an entirely new method of characterization; this is only some of what can be learned from examining video games.

The Effects of the Target of Rapamycin on Genome Stability

Melissa Jackson (Erin Strome)

The Target of Rapamycin (TOR) pathway plays an important role in cell growth, nutrient metabolism, and autophagy. Specifically, the TOR pathway is made up of two semi-independent components TOR complex 1 (TORC1) and TOR complex 2 (TORC2.) My project is to look at the TORC2 component, as TORC2 is known to negatively control calcineurin-dependent transcription pathways. Within the calcineurin complex, two subunits are present CNA1 and CNB1, where CNA1 is known to be the catalytic subunit. However, in yeast, there is a homologous gene for CNA1, known as CMP2, which can act as the catalytic subunit if CNA1 has failed to be expressed. The questions for this project include: What effect will knockout of the Calcineurin complex (CNA1 and CMP2) have on the TOR complex pathway in the organism *S. cerevisiae*? Will these effects have a statistically significant effect on genome stability? And what other genes and mechanisms may effect/interact with the Calcineurin complex that could play a significant role in genome stability?

A Network Analysis of NKU's Anthropology Community

Cadence Blevins (Douglas Hume)

The focus of this Honors Capstone was to study the use of network analysis to find relationships between the students and faculty of the Northern Kentucky University anthropology program. As part of the final documentation, this paper reviews literature that discusses what social network analysis is, as well as its uses. The methods used to create and implement my project and findings are also discussed, as well as the findings that were most significant. After the project, it has been determined that the students of the anthropology program have good relationships with multiple faculty members. While archaeology students seem to be going to the archaeology professors, they are also going to other faculty, along with other students who are studying cultural, linguistic, and bio-physical anthropology. This project aids the anthropology program in learning more about the relationships between the students and professors. This project and the results highlight how vital these relationships are, no matter the discipline of the student. By analyzing the social networks of the anthropology program, Northern Kentucky University can see how well the program is connected between the students and faculty.

Antibiotic Drug Potential of Microorganisms that Inhabit Kentucky Native Insects

Erica Adams (John Carmen)

As the number of infections caused by drug resistant bacteria increases, the demand for new substances capable of antimicrobial activity becomes greater as well. The objective of this project is to explore the antibiotic drug potential of compounds extracted from native Kentucky insect species and the microorganisms that inhabit them. These compounds were tested against infectious microbes such as *Escherichia coli* using disc diffusion and antimicrobial assays. Venom harvested from *Apis mellifera* and *Polistes fuscatus* showed no antibacterial or antifungal activity. In contrast, multiple antimicrobial-producing microbes isolated from various insects were isolated.

Lost in Translation: Comparison of America and Dominican Culture through Creative Non-Fiction

Madelyn Neidhardt (Jessica Hindman)

Following two mission trips to the Dominican Republic a young woman from the United States shares her tips and tricks to having a successful trip abroad through a "Quick Guide". Yet, something, or rather someone, interrupts her and leads her down a disconcerting path. Follow along as she comes to grips with who she is, what she has done, and what she has to offer the world and the people that she thought she knew.

Written in the style of a creative non-fiction writing piece Madelyn Neidhardt, an Honors student at Northern Kentucky University, uses her unique view points of the world and mission work to provide a narrative of her inner struggle to understand not only the events surrounding two weeks of her life, but also the world she now lives in.

Hipster Images: The Myth of the Archetypal Record Store Customer

Peter Huffman (David Thomson)

Think of a stereotypical record store customer, and chances are that the person who you're thinking of is a white male. On my many trips to record stores throughout the years, I saw many customers who didn't fit that stereotype, and I decided to find out if there was any truth to it. Over the course of this past semester, I worked with Prof. David Thomson in examining the people who shop at record stores and determining trends in their shopping patterns. For each customer, I recorded an approximate age range, gender, ethnicity, number of shopping partners, and what they purchased, if anything. I observed 249 customers at 15 record stores as far north as Columbus and as far south as Lexington. As it turned out, the stereotypical white male made up 61% of shoppers, with white females right behind at 29%. African-American males and females together made up 25% of all customers observed. I also recorded data about the environment of each store, which included whether they sold their own branded

merchandise, had a live performance space, or drew customers in by any other means. I would like to thank David Thomson and all record stores involved in this project.

Geospacial Distribution Analysis of Sasquatch Sighting Locations in North America

Nathaniel Hudson (Hongmei Wang)

Often people who come forward as having encountered a sasquatch are met with criticism and skepticism. Due to this alleged creature not being recognized by science, the study of these sightings often is ignored. This study will focus on finding potential correlations and findings based on geospatial analysis and methods of sasquatch sighting locations in the continental United States. This study uses sighting point data from the entire continental United States to produce additional or more conclusive findings regarding the relationship between geographic and ecological variables and sasquatch sightings. To analyze the relationship(s) between sasquatch sightings and geographic and ecological variables, a variety of tools are used. Some of these tools include software such as ArcMap, Google Earth, SciPy, NumPy, and XLRD. Analyses are accomplished through methods from geographic information systems (GIS) and statistics. Upon completion of this study, there appears to be a positive relationship between temperature and precipitation in regards to sasquatch sightings. In addition to this and other correlations discovered through statistical analyses, GIS density maps show hotspots for sasquatch sightings. The geospatial scale of this study contributes to this small body of already existing research, where most studies focus on smaller geospatial space to analyze.

Improving Lyric Intelligibility in Live Music Concert Settings

Jared Koshiol (Greg DeBlasio)

13 individuals were asked to listen to 8 short passages of music from 2 songs containing sung lyrics and compare the music as it was presented at 94dB (A weighted) through 3 different systems; one emulating a standard live music performance, one with the vocal channel assisted by digital effects (Compression, Adaptive Limiter, EQ and a Harmonic Exciter), and the third where the vocals were removed from the left and right speakers and instead played through a single center speaker of the same make while instruments remained in the left and right speakers. Participants indicated their perception of lyrical intelligibility and pleasurability of the sound for each passage and system, ignoring artistic choices. Responses indicate that the use of a center speaker for vocals greatly improves (in one case almost doubles) listeners' ability to perceive the lyrics as well as their overall enjoyment of the sound. The use of effects processing on the vocals somewhat improved lyric intelligibility and pleasurability for one song, while slightly decreasing these values for the other song. These results have interdisciplinary implications, from improving communication with an audience (public relations and business) to broadening the scope of sound systems for artists.

Applications of Organometallic Chemistry to Contemporary Solar Cell Technology

Jason Callihan (Keith Walters)

In a world where the demand for a cleaner and more renewable source of energy is becoming increasingly important, attentions have been diverted to enhancing the efficiency of contemporary solar cells. To achieve this task, efforts have been made to transition from typical silicon cells towards cheaper and more affordable dye-sensitized solar cells. These systems have preliminarily been shown to elicit promising capacities for the conversion of sunlight into a usable potential. This series of investigations attempted to shed further enlightenment on the types of dyes that may serve as viable compounds for future implementation into these types of cells. Specifically, these examinations revolved around the expansion of small transition metal complexes into larger electron donating and accepting polymers via the incorporation of ruthenium and/or rhenium in conjunction with aromatic fullerene substituents. The results of these analyses definitively showed that Sonogashira coupling could successfully be utilized to

synthesize a hub molecule capable of allowing for the protections and subsequent selective deprotections that were necessary in order to form the desired polymeric systems. While the proof of concept approach was effective, further synthetic advancements will be needed prior to the investigation of these compounds as viable solar cell dyes.

What is a Stage Manager?

Katie Ruwe (Brian Robertson)

This project was an in depth look at the life and duties of a stage manager involved in a theatrical production; detailing time spent, duties completed, as well as how the duties of a stage manager tie into and reflect that of a business manager. While working on a production entitled *Unfrozen* at Northern Kentucky University as part of the Biannual YES Festival, I kept a journal that detailed any challenges that I faced during the rehearsal and performance process and the skills that I used to solve those challenges. I also offered commentary on whether or not these skills fit solely in the role of a stage manager, business manager, or both. The project was culminated in the creation of a production bible; a common tool used by stage managers on touring shows that details the movement of actors, props, costume, scenery, etc. It also includes other relevant information to show as a whole. The goal and overall purpose of the project was to showcase a position that often goes unseen during a theatrical production as well as to further educate people on just who and what a stage manager is to a production.

Fandoms: Modern Communities Shaping our Culture

Keegan Johnson (Ali Godel)

My Honors Capstone is a study of the creation and subsequent maintenance of communities formed by fandoms. Fandoms, on their own, have always existed; they are nothing new and are a topic that has already been heavily explored and researched by pop culture scholars. However, the channels of communication have broadened and evolved with the ever-growing emergence of social media platforms and online blogging. I will first explain the rise of virtual relationships among peers and how their roles ultimately contribute to the vast and significant growth of virtual communities. More specifically, I'll examine the ways in which virtual relationships blossom without face-to-face personal interaction. Not only that, I will illustrate the similarities and differences between physical and virtual relationships and how in our current culture one simply cannot exist without the other. I will then discuss how physical and virtual relationships and fandoms have evolved to form hybrid communities in our modern culture.

Building a Sustainable Food Future

Peter Enzweiler (Donelle Dreese)

People are changing the way they think about food. They want to know where and how their food has been produced. At the same time, food production is changing to fit the needs of a growing world population. Despite a growing interest in local and sustainable food, smaller farms are struggling to survive. Many are being bought out by larger operations or are simply closing down. This paper goes into the benefits and drawbacks of large, commercial farms, such as the risks and benefits of genetically modified foods. In addition, it explores alternative production and distribution methods for small farms such as market-farming and CSA-farming as well as service-based alternatives to pure-production agricultural models.

Autobiography through Exploration of Body

Ronald Brookbank (Donelle Dreese)

This project in the most simple sense, is an illustrated autobiography. It is a "gallery" display of images and stories that create an atmosphere, and it allows the reader to explore memory in a non-linear

fashion. In the personal sense, this project was a study in conquering fear. Composing this project was a method to explore all the ways that I shut myself off from my audience in my art making, and it was a method to actively work against that fear. These are stories that I selected through mindful examination, that I feel express what I have learned emotionally and spiritually throughout my time in Undergrad. I have composed my story as if it is being displayed in a museum. Each section is introduced by a curator who explains the upcoming themes and significance of the parts of the body my audience will explore. This was a method I utilized to self-critique my tone when I felt I was making statements that were too general or omniscient without removing those statements all together.

Rural Healthcare in Kentucky

Shelby Lesak (Patrick Schultheis)

There are 120 counties in the state of Kentucky with 90 of those counties being considered medically underprivileged. The University of Kentucky and the University of Louisville have collaborating together to help improve healthcare in the rural areas and for my project I decided to take this further. I focused my efforts on one county in Kentucky in particular, my hometown of Harrison County. I used census data and a healthcare survey taken by the health department and did my own healthcare needs assessment. I found that the area has a lot of significant healthcare problems but overall their needs come from the lack of access to the care and education on health. Therefore, I did a service project that allowed me to collect over 200 healthcare and hygiene products and created a brochure about proper healthcare that was passed out at a local event. Overall my brochure and products were able to reach over 100 families and I plan to continue my work from here.

How Studying Abroad Influences Civic Literacy

Renae Nelson (Robert Wilcox)

Within education systems all over the globe, a civics education has rapidly declined. Scholarly research has pushed for a revitalization of civics courses within primary school systems in order to create culturally aware, engaged, citizens who actively participate in society. However, based on recent studies performed on college campuses, students in higher education do not know the most fundamental American history and political science questions within the United States. Instead, it seems that pop culture and social dynamics within the celebrity spotlights have become increasingly important rather than civics. The research performed in this capstone provides support for refocusing primary schools on education as well as encouraging students to study abroad. Studying abroad allows for students to learn in another country and being immersed in their culture. This experience influences civic literacy because students while learning classroom material are also learning to be conscientious and considerate of other cultures.

Purging the Deutschland: A Study on the Cultural Eugenics of Degenerate Art

Lexie Lowe (Nancy Kersell)

Purging the Deutschland: A Study on the Cultural Eugenics of Degenerate Art is an attempt to chronologically analyze the political implications of art and aesthetic ideologies during the rise of the Third Reich in Germany. Under the supervision of my advisor, I created a 28-page catalog of the years leading up to and following the 1937 Degenerate Art Exhibit—*Entartete Kunst*—that debuted in Munich that summer; the catalogue features examples of artwork deemed "degenerate" by the Nazi party. Ultimately, degenerate art epitomizes what can happen when governmental mandates censor and attempt to create a "purified" bias in the visual narrative.

Becoming Color Brave

Kirsten Hurst (Joan Ferrante)

For this creative endeavor, I will be studying the race concept as a dangerous ideology- a “rigid way of thinking that justifies and supports actions” that cause (and still cause) “unimaginable, incomprehensible and unspeakable suffering” both on a personal and national level (Ferrante 2). My work will supplement Joan Ferrante’s *How to Have a Conversation About the Race Concept*- a project based learning book to be published by the University of California Press. Dr. Ferrante’s work emphasizes the importance of becoming *color brave*- a way of thinking that guides audiences to think critically about the power of America’s racial classification system as a prerequisite to having meaningful, productive discussions about the race concept. I will be writing a series of “ah ha moment” essays that, taken together, convey (in an emotionally impactful way) what it is about the race concept that makes it a dangerous ideology, and to build a point of view that supports that color brave frame. By marrying the deeply personal with Ferrante’s groundbreaking study, my hope is that audiences of this book will *want* to engage with the premise of race as a dangerous ideology.

On the Rails of Happiness

Kelsey Zalac (Jeffrey Varrone)

I have always believed good stories and smiles are contagious. After studying abroad for a few weeks in Costa Rica, I knew that I couldn’t stop telling stories even if I tried. As a result, I heard a lot of other people’s traveling stories. It felt like we were just sharing our smiles. This made me ask the concrete question, are traveling and happiness correlated? In my experiences, I have felt happier after traveling, but had never directly thought about it. I bought a 30 day Rail Pass on Amtrak and traveled around the US, reflecting about my experiences and asking about others’ experiences. I created a blog to help me tell my stories through pictures and words. The blog can be found at ontherailsofhappiness.wordpress.com

Population Health in NKY: Stigma Experienced by Opioid-Dependent Pregnant Women

Jane Sollberger (Teresa Huber)

This capstone project focused on exploring the relationship between the increasing rate of opioid use in pregnant women in the Northern Kentucky area and social stigma experienced by this population. Current research reflects that stigma presents a major barrier in seeking treatment for addiction. A literature review was performed which sought to answer the question: "What forms of stigma do pregnant women with opioid-use disorder experience when accessing healthcare?" Self, social, and structural stigma barriers were identified. Quantitative data (statistics and surveys) as well as qualitative data (themes found in interviews) from the opioid- addicted pregnant women seeking treatment at the NKY Med Clinic was collected. Objectives of this capstone project include identifying specific examples of stigma and understanding how stigma affects access to healthcare during the perinatal period. The results of this study may decrease stigma in the healthcare setting and facilitate improved quality of life for these opioid- dependent pregnant women.

Teaching History through Cultural Resources in Cincinnati and Northern Kentucky

Maria Hils (Paul Tenkotte)

As a future high school United States History teacher, I often think to myself about the ways in which I can truly fascinate my students with the content I present to them. This can be difficult for teenagers, especially when the topics are about happenings from over 100 years before their time. Students at this age generally enjoy learning more when they can easily relate to the content, such as by connecting it to a familiar location. I have created a capstone to combine my two disciplines; social studies and secondary education. I have successfully completed this with a combination of history research and creative lesson plan implementation. I researched the history of Cincinnati and Northern Kentucky, and then I visited the notable buildings and icons from the 19th century that I studied. I created a page on

the Sutori website in order to connect the research and field trips. Finally, I designed parts of lesson plans for my future classroom. Overall, this capstone will aid me in effectively teaching and engaging high school social studies students.

A Cure for Clutter

Celina Junker (Nicholas Brummer)

American culture seems to always leave us wanting more. Happiness seems to be something you get after buying a bigger home, a better wardrobe, or another car. However, after the initial peak in happiness, it generally goes back to its baseline after a few months. This leads to cluttered, unhappy lives. Can happiness become more sustainable? How can we appreciate what we have, instead of constantly seeking more? This project was intended to uncover how to create a successful small business that allows satisfaction in the present moment. By honestly asking ourselves whether each item in our home brings satisfaction, we prune away what we used to be, and become more of ourselves. We become less dependent on stuff, because we learn that we already have exactly what we need. Finally, we become grateful, because we learn that the cure for the rat race is simply appreciating who we are and what we have right now.

Student-Athlete Documentary

Sarah Kellam (Sara Drabik)

Played is an expository documentary that highlights the struggles of student-athletes in college. The piece explores what actually constitutes being a collegiate athlete in context of both NCAA and institutional requirements and the incredible amount of time that is required of these young adults. It also attempts to alleviate the stereotypes that surround college athletes and places emphasis on what is sacrificed to succeed both athletically and academically at the collegiate level. The documentary focuses on the stories of three student-athletes individually and uses a variety of expert opinions to convey the idea that student-athletes do have struggles during their time in college.

The Synthesis of Diketopiperazines as Potential Antifungal Molecules

Jacob Telesz (Amber Onorato)

Invasive fungal infections can be one of the most difficult infections to treat, and many antifungal agents on the market are not as effective as they originally were or were intended to be. Diketopiperazines are a class of molecules that literature has shown to possess antifungal properties. The purpose of this research was to synthesize different diketopiperazine analogues in order to evaluate a variety of molecular configurations for maximum antifungal effects. Through the coupling of amino acids, followed by cyclization of the dipeptide, four diketopiperazines were successfully synthesized and purified, with two more potential diketopiperazines synthesized and in need of purification. The antifungal tests are to be carried out by a collaborator in the NKU Biology Department.

Inside the Queen City

Mikael Soto (Traian Marius Truta)

Cincinnati: In Focus is a application for navigating the historic sites and educational centers in and around the City of Cincinnati. Its primary audience is tourists and locals who want to explore the history and culture of Cincinnati. By reducing effort needed to discover and navigate to park, museums, and other locations, more people may be encouraged to learn about the often overlooked Queen City of the West. The application accomplishes this with a database of notable tourist locations in Cincinnati, sorted into related groups called Itineraries. Users have the ability to create their own custom itineraries. Locations in pre-existing itineraries can then be added to the itinerary, or new locations can be inputted. A map interface gives visual display of locations to visit. The user can select single itineraries to have

their locations displayed on the map. A path between locations can also be generated, with an emphasis on providing the ability to have multiple nodes along the path, an aspect that is uncommon on most GPS units.

Personal Organizer

Christine Rowland (Sookyung Cho)

Scheduling and organization programs are incredibly helpful but can be overbearing or too complex.

Multiple programs may also need to be open at the same time in order to complete very simple tasks.

Due to this, I decided to research and design my own personalized information organizer. Having studied my own habits as a student, I aim to create a program which allows you to jot down events and ideas, do calculations, and check on social media. It will combine many functionalities into one simple location.

The project is currently being programmed in Visual Studio 2015 using Visual Basic. This prototype will demonstrate how students can keep their life efficiently organized.