Celebrating Discovery Across the Disciplines

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Editor

M. Scott Goodman, Ph.D.

Director, Office of Undergraduate Research

The following individuals and offices are acknowledged for their many contributions:

Donald Schmitter, Hospitality and Tourism, and students in HTR 400: Catering Management

Bruce Fox, Photographer, Marketing and Communications

Bernadette Gilliam and Mary Beth Wojtaszek, Events Management

Department and Program Coordinators (identified below)

Sean Fox, Ellofex, Inc.

and very special thanks to:

Kaylene Waite, Graphic Design, Creative Services

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Welcome to the 21st Annual Student Research and Creativity Conference!

I am pleased to welcome you to the Buffalo State College Student Research and Creativity Conference. The Buffalo State educational experience offers many ways to enrich the learning experience and to deepen students' disciplinary and cross-disciplinary knowledge. Undergraduate research is a high impact practice and participating in undergraduate research has many rewards. Students and faculty know the dedication and willingness to go the extra mile that is needed to develop a research project and to see it to conclusion. These are traits that advantage students during the academic journey, but continue to bear fruit for graduate work, career aspirations and making important differences in their world.

The Student Research and Creativity conference showcases some of the many students that engage in significant research and creative projects here at Buffalo State. The student work you will see represents the research efforts of some of the best and brightest student talent at Buffalo State College. Our student researchers have worked diligently with their faculty mentors to undertake research projects from all academic disciplines and in a variety of venues and formats. It is through research that we acquire new knowledge, solve many problems and discover new approaches. Studies have shown that research enhances what students learn in the classroom; engages their intellectual curiosity; satisfies their thirst for discovery; and provides an outlet for their creativity and enhances future opportunities. We believe that many of our students also gain self-confidence and grow intellectually by engaging in research and creative activities.

I congratulate and commend the remarkable students who are participating in this year's conference and I thank the faculty who have inspired them to this level of accomplishment. I welcome you to the 2019 Student Research and Creativity Conference and I encourage you to ask questions of our student researchers and be ready to learn about topics that may be new to you.

Katherine Conway-Turner, Ph.D.
President

Welcome to the 21st annual Buffalo State Student Research and Creativity Conference (SRCC)! Buffalo State is nationally recognized for the extent and quality of its undergraduate research and creative scholarship program. Undergraduate research and creative scholarship activities represent one of the stronger examples of a high-impact learning practice that advances the key characteristics of Buffalo State's mission. Mentored research, in which students and faculty work together to discover new knowledge, apply it to their discipline, and share it locally, nationally, and globally, is instrumental in helping students think analytically, question critically, and discover the enduring joy of inquiry. Students regularly present their research at regional and national conferences and publish their research as co-authors with their faculty mentors. This conference is designed to spotlight the quality and importance of student-faculty collaborative research at Buffalo State.

Each year hundreds of students representing every discipline on campus gather to share their research and creativity with our community. The SRCC could not happen without the hard work of the students, faculty, and staff who have devoted their time and talents to this event. Congratulations, and thank you for your dedication.

James Mayrose, Ph.D.
Interim Provost and Vice President of Academic Affairs

Welcome!

Welcome, everyone!

Welcome to all of the students, mentors, faculty, staff, and family that make the annual Student Research and Creativity Conference (SRCC) an important Buffalo State tradition. Participation in research, scholarship, and other creative activities is an incredibly important and meaningful component of many of our students' education. These activities help students to understand how scholarship is conducted within their disciplines while powerfully reinforcing concepts they have previously encountered in our classrooms, studios, and labs. The skills and discipline that students develop while tackling a research question will help propel them forward in their education and then on into their professional lives.

This year, the 21st in the history of the event, marks my first time organizing the SRCC. Much more notably, this is the first year in the history of the event that Professor Jill Singer is not running the show. I want to take this opportunity to thank Dr. Singer for many years of service dedicated to fostering undergraduate research and creativity at Buffalo State. Without her devotion and commitment for the past 20 years, this event would not be the huge success that it clearly is, and I certainly would have struggled more in my first year at the helm. The SRCC would also not be possible without significant help from committed faculty and staff members, graduate and undergraduate student helpers, and continued strong support from our administration and the Research Foundation.

So please walk around, read the posters, listen to the talks, and view the amazing artwork at the conference. But most of all, take the opportunity to talk to the creative students who are presenting their work and to celebrate their accomplishments with them. Enjoy!

M. Scott Goodman, Ph.D.
Professor of Chemistry
Director, Office of Undergraduate Research

The annual Research and Creativity Conference is one of the highlights of the academic year at SUNY Buffalo State. It provides our undergraduate and graduate students the opportunity to showcase their scholarly and creative accomplishments. The work displayed at the conference attests to our faculty's commitment to mentoring and our students' commitment to engaged learning. As research and scholarship are critical parts of the graduate education experience, the Graduate School is honored to support this work. Congratulations to all those contributing to this inspiring event, especially the graduate students. I also offer sincere appreciation to all faculty and mentors for their contributions to our students' success. Special thanks to Dr. M. Scott Goodman for his leadership and for organizing the Research and Creativity Conference, now in its 21st year!

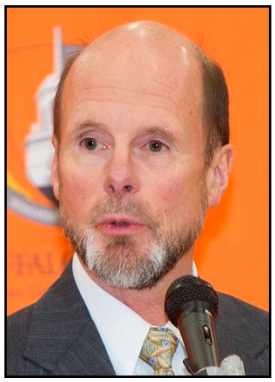
Kevin J. Miller, Ed.D.
Interim Dean, The Graduate School

Undergraduate research is a hallmark of undergraduate and graduate education at Buffalo State, and the Annual Student Research and Creativity Celebration is our traditional venue for sharing research projects and honoring the student scholars and their mentors. We are proud that our faculty, national and international leaders in a myriad of disciplines, encourage and inspire students to explore the diversity of scholarly pursuits. On behalf of the School of Arts and Humanities, I am delighted to congratulate all participants in this 21st annual celebration!

Benjamin C. Christy, A.Mus.D.,
Dean, School of Arts and Humanities

I often describe the profession of teaching as a science, a craft and an art, as it requires the teacher to master all three. This event celebrates all three "faces" of teaching and learning. Presenters this weekend have participated in the *science* that requires you to ask more questions than to offer answers and to use our intellect and professional acumen to both solve problems and create them so that knowledge can grow from curiosity. As you share with your colleague students the excitement of this pursuit, you are practicing the craft of inquiry, intellectual playfulness and collaborative thinking. But it is in the final of the three acts of teaching where you will show your unique vision, your original thought, your creative manipulation of both the real and the fantastic. You are the scientists, the master craftsmen and the artists. In today's demonstrations, take time to marvel at the accomplishments of your colleagues. Congratulations to student presenters and faculty mentors!

Wendy A. Paterson, Ph.D.,
Dean, School of Education



I am very happy to offer my congratulations to students and their faculty mentors who are presenting their work at the 21st annual Student Research and Creativity Conference, and a warm welcome to family, guests, and the entire Buffalo State community for this premier Buffalo State event. Student engagement in research and creative projects is one of our highest priorities at Buffalo State, and the broad participation across all disciplines, and inclusive of undergraduate as well as graduate students, shows our commitment to this. I look forward to learning about the outstanding work of Buffalo State students at the SRCC in May.

Mark W. Severson, Ph.D.,
Dean, School of Natural and Social Sciences

On behalf of the School of The Professions, I would like to welcome students, faculty, staff, and friends of Buffalo State to the 21st annual Student Research and Creativity Conference! This wonderful event highlights the outstanding work done across our many different academic programs, and we are extremely proud of the research you have done this year. The students and mentors we honor today truly embody Buffalo State's mission to empower a diverse population of students to succeed in a challenging world through our ideas, our innovations, and our engagement. Congratulations to all the students participating in this inspiring event, and I sincerely thank all the faculty mentors for their contributions to student achievement.

Rita M. Zientek, Ph.D.,
Interim Dean, School of The Professions

Recipients of Undergraduate Summer Research Fellowships in 2018

Carrie Catalano, Arts and Letters
Faculty Mentor: Professor Joy Guarino, Theater/Dance
Global Activism: Through a Performance Lens

Carrie Catalano will be graduating in December 2018 with a Bachelor of Arts degree in Arts and Letters focusing on dance and communications. She hopes to create both documentary and performance art films.

Participating in the 3rd Biennial International dance conference, "Decolonizing Bodies: Engaging Performance" provided an opportunity to investigate whether culture and country of origin impact the inspiration for choreography and the choreographic process and if genre of dance impacts the dancers' interpretation for performance. Findings indicate that choreographers throughout the world express activism through dance and that various genres are incorporated to create, but the political, environmental, and cultural issues addressed in the performances are specific to location. Results are presented in an artistic film that opened the 2019 annual spring dance concert, "Bodies Speak: dance is universal expression" and will be shown during Carrie's presentation at the SRCC.

Ashleigh Coggins, Forensic Chemistry
Faculty Mentor: Professor Jinseok Heo, Chemistry
Gold Nanoparticle Size Effect on the SERS Signals of Rhodamine 6G

Ashleigh Coggins is a senior in forensic chemistry expecting to graduate in spring 2019. She has been interested in applying spectroscopic methods for chemical analysis. After graduation, she will continue to pursue a master degree in forensic science at Buffalo State College and wishes to work as a lab scientist in the field of analytical chemistry after her master degree

She discovered that there was a strong relationship between the surface enhanced Raman scattering (SERS) efficiency and the size of gold nanoparticles (AuNPs) used to prepare for the AuNP aggregates. Among the AuNPs examined, the aggregates of 70 nm AuNPs outperformed those of smaller sizes in terms of the dynamic range and the limit of detection. Her research will be presented at the NERM conference (an ACS regional conference) in June 2019 and a research article based on her discovery is in preparation for submission to a journal publisher.

Eric Frauenhofer, Forensic Chemistry and Individualized Studies
Faculty Mentor: Professor Julie Wieczkowski, Anthropology
Analysis of Periosteal New Bone in Human Skeletal Remains

Eric Frauenhofer is a double major in Forensic Chemistry and Individualized Studies, focusing on Forensic Anthropology. He plans to pursue a Master's and a Ph.D. in Forensic Anthropology after graduating in the spring of 2020.

Eric conducted research on the Hamann-Todd Human Osteological Collection housed at the Cleveland Museum of Natural History. He investigated the location, size, maturity, type, vascularity, and severity of periosteal reactions, new bone growth that is the result of infection in or trauma to living bone. He described 540 lesions occurring on 333 bones of 89 individuals. Eric presented his research at the annual meetings of the American Association of Physical Anthropologist in March 2019.

Kelly Glowny, Childhood Education
Faculty Mentor: Professor Pixita del Prado Hill, Elementary Education, Literacy, and Educational Leadership
Access to Opportunity for Students Across WNY and Implications for Teaching

Kelly Glowny is a Childhood Education major with a concentration in Urban Studies. She will graduate in 2020 and plans to work as an elementary teacher.

Kelly's study determined that teachers must familiarize themselves with the community where they will teach and with the culture of their students. Moreover, her research pointed to the importance of creating opportunities for students by utilizing the resources available in the community surrounding the school. Kelly presented her project locally at the SUNY Buffalo State Professional Development Schools Conference in September 2018 and nationally at the National Association for Professional Development Schools (NAPDS) annual conference in Atlanta, Georgia in February 2019.

Bianca Gonzalez, Philosophy and English
Faculty Mentor: Professor Lorna Perez, English
The Fluidity of the Diasporic Identity in Rosario Ferre's The House on the Lagoon

Bianca Gonzalez is a junior Philosophy and English Major. Bianca is a current George T. Hole Scholar, an EOP mentor, and a former McNair Scholar. Wildly curious, Bianca's academic interests include postcolonialism, critical race studies, Latino studies, logic, mathematics, and coding.

Bianca's paper argues for reading The House on the Lagoon in light of the symbolic fluidity that is present throughout the novel. She argues that fluidity as a recurring motif in the novel represents both the cultural fluidity of the Puerto Rican diaspora, and the embodied racial fluidity of the character Willie Mendizbal. The paper contends that fluidity act as a force that is contrary to hierarchical structures of race and class that are ultimately unsustainable in the novel. Bianca presented her paper at the 4th Biennial Latinx Literature, Theory, and Criticism Conference in New York City this past April.

Kyle Goodwin, Psychology
Faculty Mentor: Professor Stephani Foraker, Psychology
How is Information from Hand Gestures Perceived and Interpreted?

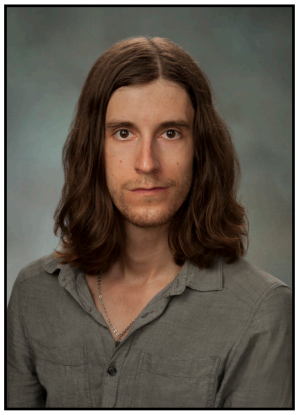
Following experience as a software specialist, Kyle Goodwin is pursuing a second undergraduate degree at Buffalo State. He plans to graduate with a B.A. in Psychology and explore a research career in cognitive science.

Kyle's research tests how information available from a speaker's hand gestures is picked up by a comprehender, such as showing the size of an object, but not saying it. He developed video stimuli and an eye tracking program to examine where comprehenders look as they view a speaker, and to what degree gestured information is perceived peripherally. Kyle plans to build on this research for his honors thesis.

Nicholas Gray, Psychology
Faculty Mentor: Professor Dwight Hennessy, Psychology
The Yerkes Dodson Law as It Is Influenced by the Threat of Social Implication and Task Difficulty

Nicholas Gray is a senior Psychology Major graduating in May 2019. He plans on pursuing a graduate degree in applied Psychology after graduating from Buffalo State.

Participants were randomly assigned to complete either easy or difficult math problems. Half of each of these groups were also told that their performance would be evaluated by others (threat of social implication). Results showed that performance was lower on difficult problems and showed a trend for poorer performance under threat of social implication. Nick plans to continue this research to see if an interaction effect exists (which requires a large sample size) and if personality factors might moderate this effect. He presented his findings at the Eastern Psychological Association conference in March 2019.



Colin Griffin, Earth Sciences
Faculty Mentor: Professor Gary Solar, Earth Sciences and Science Education
Grain-Scale Evidence, Mountainous Implications: Microtectonics of Western Connecticut

Colin is an Earth Sciences major, graduating May 2019. He plans to pursue a career in teaching high school science, but is also contemplating continuing his research career in geology in graduate school.

Colin studied rocks from western Connecticut that were buried deep in the Earth's crust when that part of North America was colliding with another continent (about 400 million years ago). The rocks recorded the collision through mineral recrystallization and encapsulation of some minerals inside larger ones. Each set produced a pattern whose oriented is documented at the microscale, and then applied to the regional scale in order to understand the rock record of the collision. Colin presented his results at the 2019 annual regional meeting (NE) of the Geological Society of America (Portland, ME).

Angelique Jordan, Communication Studies

Faculty Mentor: Professor Naila Ansari, Theatre

United Front

Angelique Jordan is a senior Communication Studies major with a minor in Dance, graduating in May 2019. She is a member of Alpha Epsilon Phi sorority, Buffalo State College Dance Company, and the Buffalo State Dance Association. Angelique is interested in merging both communications studies and dance in her future endeavors.

Angelique's research "United Front" was inspired by her ethnography in Barbados, of the Barbadian people. "United Front" positions her research on dance dramaturgy as a form for bridging scholarship and artistry in the academy. Angelique used her research to develop "Bridging the Gap," a work that connects identities of the self. Her dramaturgy created a piece for Buffalo State's Dance Concert "Bodies Speaks: Dance is Universal Expression," which established a methodology for practice as research and developed choreography under the direction of Professor Naila Ansari.

Addie Longmire, Psychology

Faculty Mentor: Professor Naomi McKay, Psychology

The Use of Unsolvable Anagrams and a Sing-a-Song-Stress Test to Elevate Stress

Addie Longmire is a psychology major who is pursuing a Bachelors of Science in Clinical Psychology with an expected graduation of May 2019. Addie is currently focusing her education on pre-medical, clinical psychology, and psychological research. It is likely that she will combine these interests by attending medical school with the goal of joining a family practice clinic.

Studies that want to cause laboratory induced stress often use a psychosocial stressor known as the Trier Social Stress Test (TSST); however, running the TSST can be technically cumbersome. Several laboratories have used other methods, such as unsolvable anagrams or a modified version of a psychosocial stressor, but there are no studies that have compared the stress response induced by these alternative techniques. The current study will investigate whether or not a modified version of the TSST known as the Sing-a-Song Stress Test or unsolvable anagrams will activate a similar stress response as the TSST. This work was presented at the annual meeting of the American Psychosomatic Society in Vancouver, British Colombia, March 2019 and a manuscript based on this research is expected to be submitted for publication in June 2019.

Astrid Martinez Perez, Childhood Education

Faculty Mentor: Professor Gliset Colon, Exceptional Education

La Vida Después de María: An Investigation of the PTSD of Puerto Rican Students Impacted by the Disaster

Astrid is majoring in Childhood Education. She aspires to have a career as an attorney, specializing in educational law.

The purpose of this study was to identify the ability of teachers to handle the Post-Traumatic Stress Disorder (PTSD) of Puerto Rican students that have emigrated to Buffalo after the devastating impact of Hurricane Maria. Overall, teachers reported not feeling adequately prepared despite having received training. Astrid presented her research at the Elementary Education faculty meeting, presented a poster at the annual Professional Development Schools retreat, and also presented her research findings at the Harvard undergraduate student research symposium.

Jessa Matteson, English
Faculty Mentor: Professor Tim Bryant, English
The Discovery Doctrine: Historical Influences and Literary Implications

Jessa Matteson is an English B.A. interested in Native American literature, the history of religion, and creative writing. Her project focused on the history of the Discovery Doctrine, its application through case law and social practices, and evidence of its influence in contemporary Native American literature. Her research findings show the long-term historical and social influence of the Doctrine on governmental practices, cultural attitudes, and media depictions that impact Native American peoples and their literature. Since graduating in December 2018, Jessa has begun work in social services in Albany, NY.

Amanda Mertowski, Geology
Faculty Mentor: Professor Elisa Bergslien, Earth Science and Science Education
Investigation of Microfibers Along the Buffalo River through Water Samples

Amanda Mertowski is a Geology Major at Buffalo State College and will graduate in the Spring of 2019. Her academic interests include studying environmental issues and how humans have impacted the environment. Amanda's future plan is to do ongoing research studying microfibers in Buffalo's waterways.

Over the 2018 summer break Amanda investigated microfibers in the Buffalo River. Her findings included studying many small samples from the river where she discovered a concentration of microfibers. The microfibers were distributed such that during a precipitation event, there was a higher concentration near the mouth of the river, and during a non-precipitation event, more microfibers were found roughly 3-4 miles up the river.

Chloe Mokadam, Biology
Faculty Mentor: Professor Camille Holmgren, Geography and Planning
Climate, Vegetation, and Ethnobotanical Plants at La Botica Archaeological Site

Chloe is graduating in Spring 2018 with a Biology major with a minor in Environmental Science. After graduation she is planning on pursuing a Master's degree in either Biology or Environmental Conservation with a focus on environmental issues affecting the Great Lakes region.

Chloe traveled to Colorado's San Luis Valley to conduct a study associated with the La Botica archaeological site, which has been used for gathering medicinal plants for ~8000 years. Chloe combined vegetation data she gathered along an elevational transect with climate data from surrounding weather stations to create a detailed description of the site's modern plant community based on elevation and important climate variables.

Sean Murphy, Childhood Education

Faculty Mentor: Professor Julie Henry, Elementary Education, Literacy and Educational Leadership

Forgiveness Leads to Happiness: Lessons from Rwanda

Sean Murphy is a senior who is student teaching in Spring 2019 and plans to complete another short-term study abroad opportunity in Germany in June 2019. He is active in the local theater community and plans to model love and reconciliation through his teaching and performances.

This project was based on Sean's experiences traveling to Rwanda with Professor Drew Kahn as part of the Anne Frank Project; the trip was designed to be a "heart-stretching experience" with challenging conversations about human rights, social justice and the power of stories. This summer research project provided Sean with the opportunity to conduct additional research about the reconciliation process he experienced first-hand in Rwanda. Sean found that one leader, Paul Kagame (VP, and then President) led the country in a commitment to moving forward in forgiveness and reconciliation after the genocide and that specific mechanisms in Rwanda allow those who participated in the genocide to help rebuild the country rather than being kept separate in prison and provides monthly opportunities for all of Rwanda to come together and help rebuild. Sean shared this research October 2, 2018 at the Anne Frank Project presentation forum.

Ja'Quona Renfro, English Education

Faculty Mentor: Professor Jevon D. Hunter, School of Education

The English Language Arts Educational Counter-Stories of Buffalo's Black Youth

Ja'Quona Renfro graduates in May 2019 with a B.S. in English Education. Ja'Quona intends to pursue both her Master's degree and Ph.D. after spending time in the classroom as a 7-12 English teacher in Buffalo, NY.

Ja'Quona conducted qualitative research on the English language arts (ELA) experiences of African-American youth attending school in Buffalo, New York. Her work captures the counter-stories, a major tenet from Critical Race Theory, of our young people as a way of challenging pejorative, dominant narratives of Black adolescents. Her findings suggest that African-American youth in Buffalo regularly experience marginalization in classrooms either through curriculum or instruction. Further, her research notes that Black adolescents have productive ideas for ELA teachers to consider for making the curriculum and their instruction more inclusive. Recently, she presented her research at the 2018 Professional Development Schools (PDS) Consortium Retreat host by SUNY Buffalo State and looks forward to building on her collective efforts.

Sukhjit Singh, Computer Information Systems
Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems
Retinal Disease Detection using Machine Learning

Sukhjit Singh is majoring in the Computer Information Systems with a minor in Mathematics. He is planning to graduate in May 2019. Sukhjit would like to pursue graduate studies in the field of Machine Learning and Data Sciences.

The research project is to create a user-friendly interface that would allow an individual to upload a picture of their eye and have it processed through a Machine Learning model to detect for eye-related diseases.

Katlin Smith, Childhood Education
Faculty Mentor: Professor Christopher Shively, Elementary Education, Literacy and Educational Leadership
Learning Science in Elementary School Classrooms of Western New York

Katlin Smith is a childhood education major who graduated in December 2018. She obtained a concentration in science and has obtained a teaching job.

Based on the 2015-2016 National Teacher and Principal Survey, the national average of instructional teaching time dedicated to science was 2.2 hours per week. In this undergraduate research study, we examined the teaching practices of 29 teachers from Western New York. Of the 29 teachers surveyed, only 11 taught science and only 2 of those teachers met the national average of 2.2 hours of science instruction per week. The results from the questionnaire were analyzed and several new questions were added to the questionnaire. The revised questionnaire will be sent to a larger sample of teachers in June of 2019.

Tara Steck, BFA Painting
Faculty Mentor: Professor Lin Xia Jiang, Art and Design
The Faces of Buffalo: Emerging Diversity

Tara Steck graduated with a BFA in December 2018. Her works focus on people in their work environment, modernist figure compositions and portrait paintings. She plans to apply for graduate studies after graduation and pursue a teaching career in higher education.

Through this project, Tara learned that any ordinary citizen can make positive contributions to our society, regardless of race, social, and economic status. Within this body of work, she has realized that people of color are still engaged and fighting for basic rights as well as social justice, while other groups seem to be benefitting from the economic system. Tara plans to use these paintings for entry to juried art shows locally and nationally as well as inclusion in portfolio for graduate program admissions applications.

Jason Titus, Wood/Furniture Design
Faculty Mentor: Professor Stephen Saracino, Art & Design
Bismuth: An Element of Art

Jason is a Wood/Furniture major who decided he wanted to return to school after leaving the Armed Forces. He plans on graduate in Spring of 2022. His academic interest, aside from Wood Design, relate to making jewelry and learning sculptural techniques such as welding. He plans to go onto Graduate School to earn a Master of Fine Arts degree to allow him to access teaching at the college level.

Jason endeavored to learn how to form bismuth crystals on a large scale and then have them incorporated into wood designs for furnishings. Through trial and error he accomplished this feat obtaining the skills to make large enough crystal structures to have them compete in scale visually for use in larger furniture objects. At this point Jason has not actually finished a piece of furniture utilizing his completed research but plans to accomplish that this semester. He has adequate amounts of finished bismuth components to execute at least one table. I have suggested to him that he submit his research to American Craft and Fine Woodworking magazines for possible publication when his furniture is completed.

Brittany Willard, Physics
Faculty Mentor: Professor Ram Rai, Physics
Study of Magnetic and Electrical Transport Properties of LuFe2O4

Brittany Willard is a senior in physics and will graduate in 2019. After graduation, she plans to attend a graduate school to pursue a Ph. D. degree in physics.

For her research, Brittany prepared LuFe2O4 compound using a solid-state reaction, although the sample turned out to be a multi-phase mixture. She studied the polycrystalline LuFe2O4 previously prepared by an electron-beam assisted solid state reaction using a vibrating sample magnetometer and ferroelectric tester. The sample showed a clear ferrimagnetic transition at ~240 K and strong magnetic hysteresis loops in the ferrimagnetic state. However, the sample did not show any ferroelectric polarization in the temperature range of 50 - 300 K. As ferroelectricity has been predicted in this compound, more careful work is necessary either to rule out or confirm its ferroelectricity.


CZURLES-NELSON GALLERY

Arts

The Art of Arranging Through a Modern Lens

Derick Sears, Music
Faculty Mentor: Professor Evan Drummond, Music

The art of arranging can be defined as composers looking back to pre-existing music and altering it, so it can be played on different instruments than originally intended. This results in new interpretations of the piece, both in technicality and pedagogy. The musical community by nature is a vast society of diverse performers, all interested in the creation of new music. Classical guitar puts itself at the forefront of this movement starting from the instrument's emergence into the mainstream at the beginning of the 20th century. Francisco Tarrega, Andres Segovia, and Emilio Pujol are among the pioneers of this realm. Tarrega himself is unanimously regarded as the first major pedagogue for the modern guitar and defined the art for every generation to come. He created volumes of arrangements from the works of Mozart, Beethoven, Chopin, and many others. The research will gather empirical data for the purpose of cataloging a user-friendly document outlining the major changes and generational contributions from Tarrega through the modern era of arrangers, such as Manuel Barrueco, and on these evolving techniques as they relate to young and upcoming artists looking for new arranging techniques for the classical guitar. Through this analysis I will gain a transparent understanding of techniques and styles Tarrega used to arrange, providing a comparative analysis of performance styles and pedagogy over the last century. Specifically this research focuses on Granada, a movement of a work written by a pianist, composer, and Friend of Francisco Tarrega during his life, Issac Albeniz.

The Beautiful Simplicity of Schubert's Piano Sonata in A Major

Melissa Monk, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

Franz Schubert's Piano Sonata in A Major, D.664, composed in 1819, embodies many artistic concepts typical of early Romanticism. Some of these concepts include the use of simple, beautiful melodies, the employment of cross-rhythms, and Classical sonata form, formerly brought to an apex by the First Vienna School, but now infused with melodic themes in place of brief motivic ideas. At this time, Schubert was still committed to absolute music, rather than Romantic program music, in the style of keyboard sonata masters such as Haydn, Mozart, and Beethoven. My project focuses on Schubert's song-like style, achieved with the use of melody as an inspiration for expressive harmonies, together with stylistic use of rhythmic variety. Some say that characteristics of the German Lied appear in Schubert's piano works because of the song-like qualities that are presented. The A-Major Sonata embodies a tuneful simplicity, but at the same time is not as simple to play as it sounds. During the period in which it was created, Schubert also composed the famous "Trout" Quintet, which demonstrates similar characteristics in a chamber music genre. I hope to contribute an understanding of the inherent beauty of Schubert's ideals of song-like simplicity throughout the Sonata.

Bellini's Norma: The Origin, the Music, the Man

Joseph Pasquantino, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

My project considers Vincenzo Bellini's famous opera Norma, drawing on score analysis of an excerpt from this masterpiece. Bellini was only thirty years old when he created what is considered to be one of his greatest operas in the bel canto style. Sources reveal that its production represented an enormous personal success for the composer in 1831—it brought him into the spotlight as one of the most sought after opera composers of the nineteenth century. I also discuss the origins of the work's title character, who is symbolic of political issues specifically affecting Italy during this period. Bellini's Norma is also an example of his fidelity to the classical Naples Conservatory musical education he had received, and thus to Italian musical ideals of the early Romantic era. Bellini's output gained him a highly respected position on the lyric stage. Yet few musical observers could have predicted that his most famous opera--one that showcased the dramatic soprano voice—would become a classic piece of music literature for the next two centuries.

Bismuth: An Element of Art

Jason Titus, Wood/Furniture
Faculty Mentor: Professor Stephen Saracino, Art and Design

Why bismuth? The use of bismuth in the art world is limited to jewelry and sculpture. This project was designed to see how and if it was possible to incorporate bismuth into woodworking/furniture. Why? Simply put when it comes to art you are at constant odds with the artist that came before you. Striving to create something original, more often than not, you end up with something uniquely unoriginal. With a new medium, this research paves the way for new original ideas for others to incorporate into their own art works.

The methods and techniques I used focused on trial and error. This allowed for simple explanations of process and techniques on how to cool the bismuth appropriately. Cooling the bismuth included adjusting cooling times, and adjusting formats for working safely during each step and modification along the way when necessary. Having successfully created a bismuth inlay I found it would be easy to incorporate it into numerous woodworking designs for furniture. I am showing examples of bismuth in different crystal forms to show the stages of the process. This will give the viewers an appreciation for the process. I will also have a table top available demonstrating how a final product could be incorporated into woodworking/furniture based art works.

Clara Schumann: The Self-Doubting Composer

Nicholas Stanford, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

Clara Schumann is highly regarded as one of the most accomplished composers and leading virtuoso performers of the nineteenth century. Despite this, she embraced the nineteenth-century belief that men were superior to women and that women could never be great composers. Through Clara Schumann's Piano Trio in G minor, op. 17, I plan to expose her considerable accomplishment as a composer through her use of musical form and extended techniques. Not acting like a typical Trio, her piece is written in Sonata structure but chooses a Scherzo as the second movement, breaking the conventional structure. In addition, her use of counterpoint throughout the first movement demonstrates her deep study of Bach. I analyze Schumann's score to highlight examples of compositional techniques innovative for her era, as well as techniques mastered before her from which she drew inspiration. I shall also provide a historical context of the Trio, explaining significant life events through primary sources such as Clara's personal letters to friends and family, as well as documents highlighting her concert schedule with performances of her op. 17. This study serves the purpose of analyzing her personal self-doubt and its effects on both the composition and public performance of the Trio. Although many consider this piece to be Clara Schumann's greatest and a landmark of Romantic chamber music, ongoing personal struggles prevented her from recognizing its enduring value.

Debussy: Poetry in Tones

Gerlinde Cregg, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

The Romantic Era was a time where creativity, emotion, and surreal music and art could blossom freely. Romantic artists saw the world in an emotional light. Composer Claude Achille Debussy (1862-1918) infused such elements into his music and, like other composers of his time, drew inspiration from poetry. Debussy became an admirer of French poet Paul Bourget, composing multiple works based on Bourget's poems in his early years at the Paris Conservatoire. These melodies (the French equivalent of the German lied) exhibited Debussy's mastery of text and melody. His poetry played in tones in its setting of Bourget's own poetic art. I focus on Debussy's musical setting of Bourget's Deux romances (1885), in which Debussy's piano accompaniment pulls the listener into the poetic atmosphere, establishing a tonal center yet expressing a floating sensation to embody the "vanishing vapor" of Bourget's text. I will draw on contemporaneous letters written during Debussy's time at the Conservatoire concurrent with the Deux romances, as well as biographical sources, to examine the relationship between Debussy and Bourget. Deux romances, while being a youthful composition from early in Debussy's music career, is a prime example of his mastery of the French melodie, expressing poetry through a blend of music and tones.

Faces of Buffalo: Emerging Diversity

Tara Steck, BFA Painting
Faculty Mentor: Professor Lin Xia Jiang, Art and Design

My objective for this project was to bring to light through oil painting, the ordinary people that have done or are doing extraordinary things that make our city grow and flourish. I have created a series of six oil painted portraits, ranging in size from 18 by 24 inches to 24 by 30 inches, which will be exhibited in the spring. The series consists a diverse group of people who represent the city of Buffalo. I was interested in representing the people who have made positive contributions to our community in the hopes that others would be inspired by them. I am inspired artistically by many approaches and styles to painting; therefore my style reflects these qualities. My portraits consist of expressive brush strokes combined with a visual transformation of paint to represent surface quality. Compositionally, I have purposefully incorporated their working or social environment and what they represent in the image making process. My process includes my researching on individuals and my traveling on site to interview and take high-resolution photographs of my subjects. With photo references, I then work on the rest of painting process. As an artist I strive to make the ordinary extraordinary.

Food for Thought: A Study of Restaurant Logos

Crista Sukennik, HON 400: All College Honors Colloquium
Faculty Mentors: Professor Brent Patterson, Art and Design and Professor Andrea Guiati, Modern and Classical Languages

Contemporary restaurants no longer simply rely on their food for a reputation; they rely on their image. The face of any business in today's world is its logo. Those of restaurants in

particular are especially eye-catching and memorable. Not only do we retain the images of the logos, but their connotations stick with us as well. My hypothesis for this project is that there are particular images and design features that have evocative associations and that restaurants use these qualities to convey certain messages through their logos. This research will take a closer look at prominent restaurant logos and analyze the methods behind the madness; in other words, I am probing the question of what exactly makes a logo work for a restaurant and why. My current analysis includes a taxonomy of restaurants logos and comparisons, as well as articles and literary resources covering the themes of branding, design, and restaurants. My research takes into account various design features, such as color, imagery depicted, and overall graphic style to decipher the connotations of these elements and why they are successful. Being that the logos belong to restaurants, we can suspect that they directly or indirectly elicit connotations of hunger, among other potential emotions such as happiness, haste, or comfort. My findings will be used to evaluate the function of restaurant logos in society based on their purposeful design characteristics.

George Gershwin: Painting With Sound

Sydney Williams, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

George Gershwin (1898-1937) was not only a celebrated composer but a visual artist. This is extremely relevant to his symphonic tone poem An American in Paris, written in 1928. The Romantic tone poem genre, initiated by Franz Liszt (1811-1886), required the orchestra to tell a story through music. This musical story is called program music; it differs from its Classical Era counterpart, absolute music, which does not utilize narrative. Gershwin orchestrates his composition so vividly that listeners might close their eyes and picture themselves on the city streets of Paris. Gershwin's melodies, upon which the piece is constructed, have an easygoing "walking feel"; his principal themes are respectfully named "walking theme 1" and "walking theme 2." Other melodic themes depict feelings of homesickness and joy at arriving in the city of Paris. His instrumentation is fascinating as well; the story goes that George and his Parisian host family went shopping for real taxi horns to use in actual performances of An American in Paris, and they ended up purchasing over twenty of them! My research sources place George Gershwin's talent and compositional techniques into historical perspective, and I hope to explain Gershwin's enduring popularity and artistic distinction as an essential presence in American music.

Global Activism: Through a Performance Lens

Carrie Catalano, Arts and Letters
Faculty Mentor: Professor Joy Guarino, Theater

My goal for the "Global Activism: Through a Performance Lens" project was to film choreographers' perspectives on dance as activism to create a documentary film expressing that choreography is used worldwide to make a change. Participating in the 3rd Biennial International dance conference, "Decolonizing Bodies: Engaging Performance" provided an opportunity to investigate whether culture and country of origin impact the inspiration for choreography and the choreographic process and if genre of dance impacts the dancers' interpretation for performance. In spring 2018, I performed in "Movers and Shakers: Dance as Activism," presented by Buffalo State Dance Theatre. The student-choreographed concert expressed social justice issues that impacted the choreographers and motivated their creativity. This experience inspired my Arts and Letters capstone project, to create a documentary video on the concert focusing on process to production. When notified that I would be participating in an international conference with an activism theme, I shifted the focus from investigating the creative process for a single local concert to an international conference. I observed the performances and workshops and interviewed conference participants, documenting through audio and video recordings, to gather information on whether dance can be a form of activism for choreographers from different cultures. My data indicated that choreographers throughout the world express activism through dance and that various genres are incorporated to create, but the political, environmental, and cultural issues addressed in the performances are specific to location. Where you live impacts different ideas and inspires different representations of the issue being advocated.

Immorality in Richard Wagner's Die Walküre

Amanda Ruiz, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

My research considers the famous "Ride of the Valkyries" scene from Richard Wagner's opera Die Walküre, the second in a cycle of four German music dramas--Das Rheingold (The Rhinegold), Die Walküre (The Valkyrie), Siegfried, and Götterdämmerung (Twilight of the Gods)--that comprise the massive tetralogy Der Ring des Nibelungen (The Ring of the Nibelung). Through musical analysis, I explore late Romantic compositional techniques in orchestration, rhythm, and the potent use of syncopation. I also consider the moral background to Wagner's work, including a broad vision of the anti-Semitism that was part of his world. The overall story of Die Walküre is based on Norse mythology. The narrative relates an in-depth saga

of twins, separated in early childhood, who meet as adults and fall in love. This unusual pairing antagonizes the gods, who want to punish them with death. The Valkyries thus march in the hope of finding and destroying them. The principal melodic theme of the Ride of the Valkyries originates in a "Sword» motive, heard in both the first and second act's overtures, then transformed into a "Flight» motive with the familiar theme. The orchestration of Die Walküre is struck through with the intemperate powers of Nature. I hope to bring a dual understanding of Wagner's musical and moral worlds through this opera and the larger cycle to which it belongs.

Impressionism: The Reinvention of Music

Kirsten Brady, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

From the late nineteenth through the early twentieth centuries, we can see how the course of art developed in relation to poetry, visual art, and especially music. This reinvention of art is known as the Impressionist Era, or simply, "Impressionism." This study delves into the work of one musical composer who fully embodied this movement: Claude Debussy (1862-1918). I will discuss his work Suite bergamasque for solo piano, with a focus on the timeless piece "Clair de lune" (Moonlight). Debussy draws inspiration from poetry and visual art in order to create a story, formerly a Romantic practice that created the genre known as program music. I consider the influence of French poet Paul Verlaine (1844-1896) to discover how his collection of poems Fètes galantes (1869) inspired musical motifs in the Suite bergamasque. Connections also appear between Debussy's music and the art of the Baroque painter Antoine Watteau (1684-1721) that relate to Debussy's love of nature. My ultimate goal is to dissect the musical components of "Clair de lune," emphasizing manipulation of rhythm and symbolism of specific musical motives. The combination of arts in Suite bergamasque offers a clearer view of Impressionism's artistic meaning in the work of a master composer.

The Japanese Shakuhachi over Time

Julianne Beiter, HON 400: All College Honors Colloquium
Faculty Mentors: Professor Carolyn Guzski, Music and Professor Michael Johnson, Modern and Classical Languages

The Shakuhachi, an end-blown Japanese bamboo flute, has transcended time and diverse cultures. The instrument has represented Japan religiously, politically, and culturally, taking on many different forms and meaning throughout history. My research on the organology of the Shakuhachi over time shows significant changes in the shape of the instrument, the harmonic structures of its music, and its cultural significance. Although its origins are unclear, a relationship has been found with the Chinese form of the instrument. In Japan, a predominantly secular use of the Shakuhachi was found until the Edo period (1603-1868). The Fuke sect of Zen Buddhism subsequently arose during the Edo period with the view of the Shakuhachi as an otherworldly instrument. One result of the instrument's new religious importance was the birth of the honkyoku style, and the creation of the first compositions written by Fuke musicians. I analyze the musical components of typical Shakuhachi styles during the Edo period from regions where the Fuke sect flourished. I also trace the rise of the contrasting Meiji period culture marked by Buddhism's decline in favor of Shintoism, and the resulting disappearance of the komuso (the members of the Fuke sect) and the theological significance previously attributed to the Shakuhachi. I conclude with a musical perspective on the Meiji restoration, when reemergence of the komuso and Shakuhachi performance was seen, an artistic development which has endured to the present day.

Jules Bledsoe: Portrait of a Young Artist in His Own Words

Tracy Clark, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

Best known for creating the iconic role of Joe in Show Boat, baritone Jules Bledsoe (1897-1943) lived an impressive life as a trailblazing African American artist in Broadway and operatic roles during the first half of the 20th century. From humble beginnings in Texas, Bledsoe faced racial oppression both at home and during his early career in New York. Bledsoe sang operatic roles in both America and Europe, and though it is evident from major reviews that he was not lacking in talent, he was never offered a position on the artist roster of the Metropolitan Opera. He was also an experienced recitalist, often programming spirituals that demonstrated the importance of his heritage. My project uses Bledsoe's own writings, drawn from archival documents held among his papers at Baylor University, as evidence of his development as a young artist. My research shows how Bledsoe gained recognition very quickly as a young singer, based on his powerful baritone voice, and kept making great art through dark times. The goals of the study are to reveal Bledsoe's artistic foundations, the professional connections he was able to forge in his journey towards stardom, and his significant artistic influences. In addition to primary sources, concert programs and critical reviews from Bledsoe's earliest professional performances contribute to my own perspective as a contemporary musician on the creative process and the early life experiences of an important American singer.

The Little Bell: Program Music as an Art Form

Ariana Jones, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

Franz Liszt (1811–1886) was a celebrated Romantic piano virtuoso who composed much original music and transcribed many pieces by other musicians. My study focuses on La Campanella ("The Little Bell"), the third of Liszt's Six Grandes études de Paganini, S. 141 (1851). This volume of piano études is comprised of five transcriptions inspired by Nicolò Paganini's 24 Caprices for Solo Violin, and one transcription based on a melody from Paganini's Violin Concerto no. 2 in B minor. Liszt took the final movement of the Concerto and transformed it in a way that only he could. The "little bell" of the title is referenced by fiendishly difficult right-hand leaps up and down the keyboard whose intricacy and difficulty are unique to Liszt's playing style. In addition to these highly challenging leaps, Liszt adds rapid note reiteration. I explore the ways in which Paganini's piece was "remixed", so to speak, by Liszt's virtuoso technique. I hope to apply my knowledge of score analysis and conventions of the Romantic era, as well as biographical studies of Franz Liszt, to connect La Campanella to the characteristic Romantic program music. I hope to contribute to the understanding of Franz Liszt's style and how La Campanella perfectly represented the Romantic aesthetic.

A Marriage of Poetry and Music: Verklärte Nacht

Tanner McMullen, HON 400: All College Honors Colloquium
Faculty Mentor: Professor Thomas Witakowski, Music

Schoenberg is one of the most influential composers of our time. While he is best known for creating the twelve tone compositional technique, he began composing works that were centered in tonality. He pushed the boundaries of tonality to their limits, creating both lush harmonies, and intense dissonances. I will be exploring how Schoenberg uses musical rhetoric in Verklarte Nacht. Musical rhetoric is the use of musical devices such as instrumentation, tonality, harmony, and extended techniques to convey a message. Verklarte Nacht was composed towards the end of Schoenberg's tonal period in 1899. Verklarte Nacht is based on the poem by the same name by Richard Dehmel. In this emotional work, a man and his wife are walking in the woods when she confesses she has been unfaithful and is carrying the child of another man. After thinking, the man forgives her and decides they will raise the child together because of their love. I will be comparing the musical score and the poem to investigate how Schoenberg pushes tonality, uses orchestration, and applies extended techniques to convey these complex emotions to the listener in the music. I will be giving a talk with musical examples to highlight many of the ways Schoenberg can achieve such emotional and captivating music.

Mozart: A "Cushion" of Sound and Melody

Dillon Slater, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

My research addresses the ways in which Mozart's famous Symphony No. 40 in G minor, K. 550, transformed a typically Classical genre in a new and exciting way while functioning as an important precursor to the colorful music of the Romantic Era. I focus on details of the opening movement's evocative formal structure and orchestration, including important instrumental modifications made after it was composed. I apply these musical aspects to symphonic score analysis from theoretical sources. I also examine the composer's biography to reveal why Mozart chose to compose one of his final symphonies in a minor key, and how it relates to surrounding works such as the "Jupiter" Symphony, K. 551. Early in his life, Mozart enjoyed a rich lifestyle and a plentiful education (music included) from his father, Leopold Mozart. Much later, during the mid-1780s, Mozart became a Freemason and adopted liberal ideals into his life, influencing a colorful period of his musical career. What I hope to contribute to an understanding of this piece is a broader scope of just how unique and grand this symphony was, compared to everything that Mozart had composed before and after.

The Natural Strength of Women in Schubert's Ellens Gesang: Ave Maria

Emily Barger, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

The art of German Lieder embodies the fervor of both poignant music and poetry. Austrian composer Franz Schubert (1797-1828) mastered the genre by demonstrating that its two artistic components, when combined, may express ideas both concrete and ethereal. Schubert created his Liederkreis, or song-cycle, Lady of the Lake from poetry of Walter Scott (1771-1832), his contemporary in the transitional Classical to Romantic period in the fine arts. This study intends to show that the grounded nature of literary Neoclassicism, as well as the soul-delving aspects of Romanticism, allowed Schubert to musically characterize women as powerful healers. His orchestration, rhythms, and harmonization of the piece depict a sensitive, secure woman who beseeches the sacred Virgin Mary to end the warring violence of men. Blending this idea with Scott's poetic descriptions of the natural world transforms Ellen's spiritual prayer into reality. I analyze both literary text and musical score to locate Ellen's position in time, and draw on Schubert's historical past to reveal his perspective on women. I also consider both Classic and Romantic ideals in the depiction of Ellen's image with respect to the position of women in society of her time. My study ultimately poses new questions on the insights gained from transitional artistic eras, and I hope to offer a less rigid viewpoint on defining movements in music and literature through the hybrid nature of this work.

Recycled to Shine: Environmental Awareness & Jewelry Design

Julia Pacer, Art
Faculty Mentor: Professor Steve Saracino, Art and Design

This proposed research project begins to explore how mining virgin metals creates landscape destruction, and air pollution in comparison to using recycled metals which does not contribute to any added pollution when reused. All mined metals are part of a non-renewable resources. Mining what are called "virgin metals," coming straight from the Earth, include the addition of carbon emission, greenhouse gases, waste rock, sulfur dioxide emissions and water pollution, causing dirty sludge in water systems and general pollution in the environment. Using recycled metals can eliminate these intrusions on the environment. By breaking the chain of mining, we can reheat and melt down the old metal. My research will be measured successful after creating jewelry using the process of soldering recycled metals and learning to work with the characteristics of recycled metal, and how this is just as efficient as working with virgin metals. And the jewelry will be as high of quality as virgin metal jewelry. Consumers will grow knowledge on a topic that might not be aware of. Right now, our Earth is in hurt with so much pollution that humanity has inflicted on it after years of mining. This is the time to take alternative measures and find ways to help the growth of environmentalists to reduce, reuse, and recycle.

Saint-Saëns' Swan Song: A Closer Look at "Carnival of the Animals"

Josephine Klaczyk, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

Although not nearly as well remembered as other Romantic composers of his time, French composer Camille Saint-Saëns (1835-1921) is nonetheless one of the nineteenth century's greats. My project considers one of his most famous compositions, The Carnival of the Animals (Le carnival des animaux). I focus on the melody of the famous cello solo "The Swan," as well as the interesting orchestration of the piece as a whole. I also examine Saint-Saëns' own feelings about the work. Carnival of the Animals is a fourteen-movement composition, wherein each movement musically depicts a different animal (or group of animals): lions, elephants, donkeys, and many more. It has a unique orchestration, utilizing auxiliary instruments such as the rare glass harmonica. This was common for Romantic composers, led by Berlioz's Symphonie fantastique. Saint-Saëns' piece was not published until after the composer's death, and my research demonstrates that this was because he did not consider it to be a serious work. Despite this, it has become the best known of his compositions. Through score study and biography, I gain a deeper understanding as to why Carnival of the Animals has become the most recognized of Saint-Saëns' works, among the hundreds of Romantic works that have faded into obscurity.

Schubert's Arpeggione Sonata: Popularity, Criticism, and the Guitarre d'Amour

Elena Smith, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

Franz Schubert (1797-1828) was a brilliant composer known for his masterful melodies and vast array of vocal and instrumental works. Unlike many of his famous works that are critically lauded, the Arpeggione Sonata is surprisingly far more popular amongst performers and audiences than Schubert scholars. The sonata has long outlived the instrument it was originally composed for, the arpeggione or "guitar d'amour", and is regularly performed on both viola and cello. The guitarre d'amour itself was invented in 1823 and is essentially a bowed guitar. It featured six strings tuned like a guitar, frets, a body shaped with guitar and cello influence, and was played bowed or plucked in the style of a cello. Schubert's sonata was commissioned by the inventor of the instrument and is the only significant work to exist for it. The sonata's unique history alone makes it stand out, but the beautiful themes and challenging passages justify the artistic attention. As a violist who has studied an arrangement of the work, my goal for this project is to explore the musical processes by which the sonata was created for an instrument that only survived for a decade before obscurity.

Shostakovich's Symphony of War

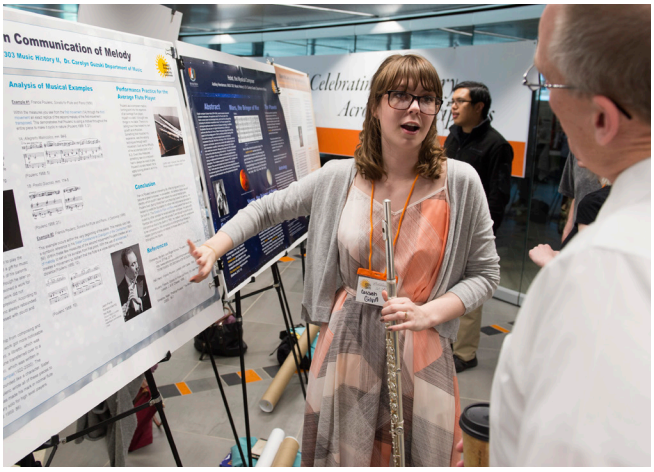
Peter Karda, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

My project explores Dmitri Shostakovich's Symphony no. 7, op.60 ("Leningrad") with the goal of revealing the composer's motivations, inspiration, and stylistic reasoning behind this exceptionally famous work. Its orchestration requires a massive cohort of instrumentalists with extended brass, percussion, and strings, components well beyond those of typical symphonic practice. I explore the melody and themes of the music throughout the symphony, and also investigate the composer's complex life and its role in his creative process when he composed this work. Shostakovich endured the horror and trauma of World War II, and these events affected his artistic choices with respect to form, melodic material, and the thematic variations used within the symphony. At the same time, the work exhibits the influence of earlier composers who had an important impact on Shostakovich's musical style. This "Symphony of War" was born from the malice of Hitler and the Nazi destruction of Leningrad by bombing it to ashes. Microfilms of the score were dramatically smuggled to the West in 1942, and premiered in London and New York to large audiences. I hope to show that world events can significantly affect the way music is composed and the meaning it transmits to the listening public.

United Front

Angelique Jordan, Communication Studies
Faculty Mentor: Professor Naila Ansari, Theatre Department

My recent travel to Barbados led me to a better understanding of practice as research and how it is beneficial to the dance field. During my time in Barbados; I was given insight into the historiography of dance and how scholarship can aid in the practice of dance. Being immersed in the Barbadian culture and learning first hand their dances; I was given embodied knowledge of both dance and scholarship. By connecting the two countries; I was able to get a united front amongst communities. While studying abroad and researching; I discovered dance dramaturgy. Dance dramaturgy allows for scholarship and artistry to merge. My research explores the process of how dramaturgy can facilitate movement in choreography. Through my research; I was able to bridge the gap between artists and scholars. By working as a dance dramaturg; I have been able to bring new perspectives to both artists and audiences. "Bodies Speak: Dance is Universal Expression" is an opportunity for my research to build through dance and choreography. I will take my findings and incorporate the artist's histories; and experiences to bring authenticity to dance as a universal expression; this spring in Buffalo State's spring dance concert.



The Woman Behind the Music: Florence Price

Tracy Clark, MUS 303: Music History 2
Faculty Mentor: Professor Carolyn Guzski, Music

Florence Price (1887-1953) was a prolific American composer who often used her African-American heritage to enrich her works. She was active during a difficult time in American history, and moved from her native Arkansas to Chicago after a lynching in her family. It was in Chicago that she moved on from composing smaller pedagogical works for piano, using techniques she learned from her time at the New England Conservatory, and began to compose larger symphonies for competitions. Her landmark Symphony no. 1 in E minor (1931-32) won first prize at the Wanamaker competition in 1932, gaining her national recognition and a significant place in history as the first African-American woman to have a symphony performed by a major national orchestra, the Chicago Symphony. My project strives to discover what made this an award-winning piece, and through score analysis I explore the themes used from African-American folk culture and determine how Price presented these themes in a symphonic context. This project will draw from primary sources, including letters and photographs from the University of Arkansas digital collections, in addition to biographical texts that highlight the period of the Symphony's creation. The goals of the study are to view these documents through a historically analytical lens to discover both Price's retrospective and introspective views on African-American culture, and to gain a better understanding of the barriers and difficulties Price faced during her career as an African-American composer.

Business, Fashion & Textile Technology, Hospitality and Tourism

Avella Marie: Advocating For Women's Identity

Shandra Lannie, FTT 451: Senior Project
Faculty Mentor: Professor Alexandra Eagen, Fashion and Textile Technology

The ideal Avella Marie woman is an inspirational, strong, leader, who is a visionary and motivator. Women should be seen from a different point of view we are not considered beautiful just because you have curves and assets, but because of how strong we are and how we carry ourselves. I realized how so many women are sometimes criticized, looked past, or just not taken seriously. Women deal with unfair wage gaps, limited options of maternity leave, sexual harassment, and being scrutinized for expressing their emotions in professional areas. According to WGSN's Spring/ Summer 2020 reports, women tend to rank higher for emotional intelligence (or Emotional Quotient), which is a direction that society is predicted to lean towards. My collection, with its clean, bold lines, professional silhouettes and timeless styles will suit women from any array of backgrounds and beliefs with one common goal: Equality.

Everyday Life: The Local's Perspective

Monaysha Laverpool, HTR 318: Cultural Tourism
Faculty Mentor: Professor Kathleen O'Brien, Hospitality and Tourism

During my travel while on study abroad, I will focus on what the locals feel is fundamental to their culture vs. what tourists feel is interesting. The purpose of my research was motivated from a picture on social media of a woman who was centered in a background where the locals were shopping, braiding hair, and watching her take pictures. When we visit different countries we forget that we are invading the locals' space. Although our visits have economic impact, this is still their home. I want my audience to see the beautiful cities of Spain from the locals' perspective and learn about what is authentic to their culture. I will be providing a timeline based on the travel itinerary as a reference point to the qualitative study. I will make observations of the locals and discuss the images and observations with our tour director. With social media being a leading influence of today's youth, I am concerned that we capture the moment and don't forget to live in it.

Family Structure and Future Demographic Picture of Croatia

Vincent Argentieri, BUS 389: Rijeka Bound Community Service
Faculty Mentor: Professor Christine Lai, Business

The depopulation of Croatia is due to a decrease in children per family, later age of marriage, and an increase in divorce rates. These changes in family structure can change the economic structure of the country, and socio-economic processes. These listed changes directly contribute to natural depopulation, which can shift the demographic movements of the country. The purpose of this work is to understand the Croatian students' opinions and attitudes towards the family demographic changes in Croatia. This study will examine the students' understanding and attitude towards marriage, family and children. I will be conducting a researcher led focus group/survey in which US and EU students will have the opportunity to share their experiences and thoughts about marriage, family, and children. In addition, I would like to see if there are any differences with the findings between students at Buffalo State College and the University of Rijeka.

Fashion Law

Faith Meyers, Fashion Merchandising
Faculty Mentor: Professor Liza Abraham, Fashion and Textile Technology

Fashion law protects many different areas of the fashion industry. It covers four main components: intellectual property, business and finance, international trade/government regulation, and consumer culture and civil rights. Fashion law first came about in 1977 when fashion brands and designers were being knocked off and did not have proper representation. Since intellectual property issues, other problems have emerged such as conflicts with employees, privacy, government regulation, and more. Protection of all of these areas is important because they are unique and complex. The industry is so vast that each category needs its own representation. The purpose of this study is twofold 1) to conduct a review of literature to explain the depth of the components of fashion law and 2) to categorize actual cases officially filed by companies and brands in the last three years that have appeared in fashion publications based on the four established components of the fashion law.

Flying the Friendly Skies; Cultural Experiences Are Worth the Hassle

Amanda Coleman and **Jared White,** HTR 318: Cultural Tourism
Faculty Mentor: Professor Kathleen O'Brien, Hospitality and Tourism

Since we are passionate about international travel experiences, our research team enrolled in a short term study abroad program this semester, Spain: Land of Many Cultures, an 11-day excursion to 6 cities in Spain. This qualitative research project will examine the various aspects of international travel including transportation, customs and immigration, food, lodging, and recreation. We will document all our adventures using a travel blog. With our combined love and curiosity for exploring different cultures and experiencing new things, we will analyze the ups and downs, and pros and cons of international travel. We want those who view our blog to feel like they journeyed with us and learn what to expect when they travel internationally.

Green is the New Orange: Reasons to Compost on Campus

Julianna Kraft, Hospitality and Tourism
Faculty Mentor: Professor Jason Grinnell, Philosophy

This project investigates composting and its role in sustainability, particularly how it could pertain to the Buffalo State campus. Research was done on the nature of composting, the most relevant methods available, where composting was being successfully utilized, how much it actually contributed to sustainability, whether any of their practices pertain or are compatible with Buffalo State's campus, and what Buffalo State was already doing on the issue. Information was collected via interviews with field experts and staff on campus, as well as extensive reading through scientific journals, government reports, case studies, articles, and published environmental reports. What was discovered was that the majority of trash produced by Americans is sent directly to landfills. However, most of this waste, such as food matter, yard clippings, paper, and cardboard, could be easily reused in the form of compost. Additionally, within the past five years there has been increasing availability of biodegradable alternatives to Styrofoam and other plastic products that are completely compostable. Many restaurants, hotels, college campuses, cities, states, and countries have already moved to eliminate waste within the next 5-15 years. Most methods are cost-effective and much of what is being done is either already actively practiced at Buffalo State or could be implemented. The presentation of this project will be in the form of a poster summarizing the claim, details on successful models, innovations in the topic area, and the compatibility of these methods with Buffalo State's campus.

Historic LGBTQ Buttons

Jordan Stover, Jennifer Duarte-Portillo, Jordan Gabryel, Kayla Lackie and **Tenzin Namdol,** FTT 349: History of Textiles
Faculty Mentor: Professor Arlesa Shephard, Fashion and Textile Technology

Our project, Historic LGBTQ Buttons, focuses on a collection of buttons representing LGBTQ history. The purpose of our project was to conduct an individual object analysis of all artifacts assigned based on observations, reflection, comparative details/ supplementary information, interpretations, and conclusions of the buttons. This included delving deeper into outside information from the donors including books, interviews, and other donations received. Background research was done on specific marches represented by the buttons to gather supplementary information as well as artists history such as with the Keith Haring buttons donated. All artifacts in this collection were donated by Samuel Lolinger, Donald Behr, Judith Bailey, and Bernadette Hoppe. All donors are located within the Western New York area. Buttons as well as other private artifacts, tee shirts, books, and interviews were donated to The Madeline Davis, Gay, Lesbian, Bisexual, Transgender, and Archives of Western New York at Buffalo State College. The buttons represent historic marches including Buffalo's first Pride Fest in 1981, the 1993 March on Washington, AIDS & HIV awareness, Gay and Lesbian services, Parents and Friends of Lesbian and Gays, Women and AIDS, AIDS action now, The Names Project, The Names Project AIDS Memorial Quilt, and The NYS Gay Games IV. All buttons are representative of LGBTQ movements during the 1980-1990's. Our project compares buttons and allowed us to collaborate on a poster to represent the buttons' unique history as well as their similarities and impact on LGBTQ rights and awareness in and outside of Western New York.

How Does Architecture Affect Tourism?

Laurie Yaeger and **Lilly Kimmins,** HTR 318: Cultural Tourism
Faculty Mentor: Professor Kathleen O'Brien, Hospitality and Tourism

The architecture in Spain flourishes with beautiful cathedrals, palaces and buildings. While on short-term study abroad to Spain, we will document and chart where the most popular destinations are and what architecture they hold. Moorish architecture started in North Africa and spread to Spain and Portugal. A prime example of Moorish architecture in Spain that we will be seeing is the Alhambra in Granada. Moorish architecture focuses on different types of arches in buildings along with vegetative design, very pretty tile work and calligraphy. In other cities we will get to experience one of my favorite types of architecture; Gothic. In Seville we will visit the famous Seville cathedral, where we will get to take in the beauty of the pointed

arches, stained glass windows and ribbed vaults. Baroque is another common architecture that is found in Spain. Baroque focuses on curves and oval like shapes, making buildings look like they're in motion. Spain seems to be a melting pot of so many different architectures, and I can't wait to see first-hand what it's all like.

How Students Deal with Negative Body Image in Europe and the United States

Irene Nkrumah, BUS 389: Rijeka Bound Community Service
Faculty Mentor: Professor Christine Lai, Business

Body image simply means the subjective picture or mental image of one's own body. Negative body image of women is a very hot topic these days. The female body image and what a person should or could look like in marketing and advertising is a controversial issue. It is noticeable that the body size of women as portrayed in mass media has been steadily getting smaller. Marketers will often do anything that they can to sell a product and make a profit, and almost anything can be sold if it appeals to our sense of beauty or is considered attractive. I will be conducting a researcher led focus group/survey in which US and EU students will have the opportunity to share their experiences and thoughts about body image. In addition, I would like to see if there are any differences with the findings between students at Buffalo State College and the University of Rijeka. The purpose of my study is to discover if students have ever felt body shamed. I will examine the perceptions of EU and Buffalo State students to compare similarities and differences.

Intricate Textiles: Legendary Drag Performer Tangarra

Maya Burrows, Diamond Ayodele and **Edward Anders,** FTT 349: History of Textiles
Faculty Mentor: Professor Arlesa Shephard, Fashion and Textile Technology

Objects of the legendary drag performer Tangarra can be found in the Madeline Davis LGBTQ+ Archive of WNY in the Archives and Special Collections at Buffalo State College. Tangarra, born John Minzer, started drag at the young age of 16 on a stage at the Erie County fair in Buffalo, New York. After conducting an object analysis and comparing supplementary information, we came to a better appreciation for the influence that Tangarra left on the LGBTQ community in the city of Buffalo. Each object observed were heavily handmade constructed textiles that included a headpiece, bodice, and purse. During the 1920s, decorative embellished textile materials were widely flourishing. Tangarra's customized purse has sequins materials and gold and black beading on it. This purse was accessorized and complemented with a customized headpiece. It is created using the stringing and knotting technique, constructed first with nylon thread, then with small black cut beads and medium sized, round, gold beads. To pull this entire ensemble together, Tangarra wore a beautiful original, handmade bodice. This sleeveless garment gives a fitted cinched illusion to the wearers waist as well as enhancing their bust. It has a strap for support, making the bodice more of a 'secret' halter. These textiles were a visual presentation of her as a person. She was an outgoing and talented performer as well as an influencer. She demonstrated confidence in herself, she was a role model to many people in the LGBTQ community in Buffalo.

Lost in Translation

Robin Ryles, FTT 451: Senior Project
Faculty Mentor: Professor Alexandra Eagen, Fashion and Textile Technology

Due to the United States diverse ethnic backgrounds shaping America, cultural heritage can be replicated by association. However, when it comes to the ignorance of the dominant groups who exploit and devalue, cultures of their own dress, jewelry, cultural symbols, hairstyles, artwork, and music; the representation and celebration of that culture's heritage is taken advantage of. This practice is referred to as cultural appropriation. The objective of my collection, "Lost in Translation," is to raise awareness within society regarding the effects of cultural appropriation and how its true meaning has been lost in translation. My collection connects to the 2019 RUNWAY theme "Reawakening" due to my visual interpretation of how our society, and mainly the fashion industry often disregards the major indigenous cultures resulting in stereotypes and cultural appropriation. I plan to shine light on cultural appropriation to encourage more ethical practices of exchanging that knowledge respectfully and justly. The goal is to incorporate this concept through symbolism and representation by giving fashion its own mind and soul through a 1990s modern/sports street wear style which can provide people with the opportunity to express themselves.

Madeline Davis LGBTQ Archives: Object Analysis

Emily Montz, Brooke Blakely, Enya Cirillo and **Meghan Johnson,** FTT 349: History of Textiles
Faculty Mentor: Professor Arlesa Shephard, Fashion and Textile Technology

From the Madeline Davis LGBTQ archives in the Archives and Special Collections of Western NY, we each did an object analysis of objects that were used at one point by Tangarra. Tangarra was as iconic drag performer who performed at many Western New York nightclubs from the 1930s to the 1960s. Tangarra's feminine energy was beloved, and she brought many fortunes to herself and to the people all around her through her bright spirited style and character. The costumes she was seen in, range from being simple and feminine, to glamorous and highly adorned

with added designs and embellishments. The Art Deco era had a significant influence on Tangarra and how she expressed herself through her style and character. Tangarra's accessories, such as costume jewelry, purses, gloves, and hats, left a huge impact on the drag community wherever she went, and her confidence was well remembered. She also became an iconic symbol for Buffalo's early gay rights movement. Wearing these types of accessories in the 1930s symbolized a freedom of self, as people were more flamboyant without a care of stylish barriers that older generations had previously held. This decade allowed Tangarra to express herself, and because of this, her past props, photos, and apparel have become protected artifacts to share the story of the early drag queen and activists.

Nonverbal Communication Abroad

Ashley Balicki, BUS 389: Rijeka Bound Community Service
Faculty Mentor: Professor Christine Lai, Business

Although smiling is viewed as a universal way of being friendly and kind, studies suggest otherwise. Smiling is very diverse and has a different meaning in many cultures. Participants in my study will also be asked how smiling and other nonverbal behaviors are perceived in their culture. My first objective is to discover how different cultures interpret nonverbal communication such as body language, gestures, facial expressions, and physical space. My second objective is to compare similarities and differences between the Erasmus students at the University of Rijeka and the students at Buffalo State. I will be conducting a researcher led focus group/survey in which US and EU students will have the opportunity to share their experiences and thoughts about nonverbal communication. My anticipated outcome is that students from the University of Rijeka and the students from Buffalo State, who are primarily from the United States, will have different perceptions of etiquette and non-verbal behaviors.

Origin Renovated : A Mini Collection

Jayla Craig, HON 400: All College Honors Colloquium
Faculty Mentors: Professor Alexandra Eagen, Fashion and Textile Technology and Professor Andrea Guiati, Modern and Classical Languages

Origin Renovated is a mini collection consisting of three full looks. It is an artistic expression of the reckoning of my past, in relation to the general cultural history alongside my personal ancestral linage, and my present, in hopes of strengthening the core of who I am as a person, and consequentially creating a more fruitful future. This collection draws inspiration from the Negritude movement of the 1930s and the linage of women that I come from The key design elements incorporated throughout the collection are the asymmetry, sheer fabric layering, tactile textures, embraced imperfections and reimagined vintage silhouettes. The collection draws direct inspiration from the Spring/Summer 2020 WGSN Designing Emotion Report. The layering and tactile textured elements of the collection are brought to life using repurposed textiles, being sourced from fabric scraps, old clothing, and old home textiles. They will be brought to life through the exploration of multiple techniques, such as being fringed by hand, patchwork design, and the Shingo Sato draping method. All garment patterns are individually flat pattern-drafted and/or draped to fit a size ten dress form. The intended outcomes are to not only project my personal vision of black heritage, but to also uncover what techniques utilized to re-purpose old material are the most successful. My goal is to utilize these techniques successfully so that they might add a deeper context to the creative inspiration of the collection by being the physical projection of beauty being regenerated and expounded upon over time.

The Real Problem: Jamaica's Environmental Journey

Victor David and **Steven Perez,** HTR 318: Cultural Tourism
Faculty Mentor: Professor Kathleen O'Brien, Hospitality and Tourism

There are many problems that Jamaica faces and one of the biggest is climate change. Tourism is gaining attraction especially in this beautiful island, but if we cannot preserve wildlife, guarantee a safe water supply, and meet standards for waste disposal, future trips for leisure or business may be at risk. What impact does tourism have on culture and the environment? In this case study, we found evidence that coral reefs have been damaged, and the list of endangered species of marine life has grown. There are concerns that sewage, oil spills, and industrial waste have affected the quality of water. The result is lack of drinking water and concern for environmental health hazards. This study will outline the action plans that are being developed for key economic sectors in Jamaica. Our goal is to determine if this is enough to reduce the risk of loss of tourism dollars due to climate change.

Reusing Spent Coffee Grounds to Reduce the Environmental Impact

Madison Greenwald, HON 400: All College Honors Colloquium
Faculty Mentors: Professor Lori Till, Hospitality and Tourism and Professor Andrea Guiati, Modern and Classical Languages

Coffee is one of the world's most popular beverages. When one factors in the coffee used in homes and foodservice establishments, it is easy to see how much waste, in the form of used, or spent coffee grounds, could result from such high consumption levels. These spent coffee grounds (SCG) end up in landfills, which increases air and water pollution, as well as greenhouse gases. Recently, researchers have begun studying ways SCG can be utilized for making other products, such as compost, biodiesel, heat sources, and ingredients for food products, in

an effort to decrease pollution. The purpose of this project is to explore research that has been conducted on reusing SCG to decrease landfill waste and create a more circular economy. I will use research articles and news stories that show how SCG are being used in research studies, by small businesses, and in daily life to lessen their environmental impact. I will then compile my findings. My goal is that, given the research presented, people will learn how to reuse SCG when possible, and that businesses who typically dispose of SPG will be educated on ways they can reuse or recycle this waste.

Seams Like A Garden

Nicolle Minaya, FTT 451: Senior Project
Faculty Mentor: Professor Alexandra Eagen, Fashion and Textile Technology

My project is a fashion collection comprised of 4-6 looks inspired by the WGSN trend forecast "Designing Emotion." Titled "Seams Like A Garden," my collection was created to represent the importance of normalizing of emotions and mental health. Children are welcome to express their feelings openly, however, society places little importance upon adults expressing emotions which is having a negative impact on mental health. Addiction epidemics, school shootings and suicide can be results of feeling the need to conceal or hide your emotions. "Seams Like A Garden" embodies the beauty in feeling something you were scared to express, by using open seams, natural dyeing, botanical dyeing techniques, and watercolor artwork painted by children. My presentation will included a poster explaining my design and my process, I will also have a garment present.

Social Media: How Much is Too Much?

Natalie France, BUS 389: Rijeka Bound Community Service
Faculty Mentor: Professor Christine Lai, Business

With all of the technological advancements that are available today, the use of social media continues to be the number one platform where people share and seek information. There are three major categories of privacy concern that affect consumers: notifications, control, and security. Many people have different perspective on social media privacy concerns. My goal is to investigate social media usage and student privacy concerns. I will be conducting a survey in which US and EU students will have the opportunity to share their experiences and thoughts about social media. In addition, I would like to see if there are any differences with the findings between students at Buffalo State College and The University of Rijeka. I am hoping to use the research to educate individuals, encourage proper social media etiquette, and engage in appropriate networking. My anticipated outcome of the research will suggest that students from the USA and Croatia will have different preferences in teaching styles because of the different cultures.

The Unexpected Armor

John Wesh, FTT 451: Senior Project
Faculty Mentor: Professor Alexandra Eagen, Fashion and Textile Technology

My project is a collection of garments that will be displayed in the FTT annual fashion show, RUNWAY. The collection will consist of 4-6 garments that are designed to offer protection without sacrificing style. The WGSN trend S/S20 Empower Up is a wake-up call about what is happening around the world. Waking up each day thinking that our lives can be gone in a matter of seconds. It is something that makes us afraid for our lives. Many young men and women have lost their lives due to mass shootings. It is seemingly becoming an unfortunate trend in our society, as the debates on gun-laws continue. Through the debates, I feel challenged to reach the new heights as a designer in order to create a better place and provide a sense of protection. I titled the collection "The Unexpected Armor" because I want to create innovative ways for protecting oneself through high fashion. This is the beginning of a movement to create a safer place for future leaders, artist, and others. This collection can provide protection within garments for its wearer through the use of interior pockets and openings to insert protective elements such as bullet proof padding. The strong lines, the sharp angles and bold silhouettes with novelty buttons represent a new way of protection in the moment of danger for the modern world. This collection is about being bold, brave and strong.

Venus: An Exploration of Lingerie Construction Techniques

Jordan Stover, FTT 451: Senior Project
Faculty Mentors: Professor Alexandra Eagen, Fashion and Textile Technology and Professor Andrea Guiati, Modern and Classical Languages

My project: "Venus: An Exploration of Lingerie Construction Techniques" will go through my process of designing a full six outfit collection and it will allow me to learn about new sewing techniques. I began my project by trend researching and searching for inspiration. I selected WGSN's 2020 theme "Empower Up" and the Italian Renaissance. Empower Up stresses the importance of the health of our oceans and my collection will reflect the urgency in correcting the current polluted state. Most lingerie lines do not use social or political topics as an inspiration. I am hoping to change that with my collection. I selected fabrics and trims that reflected these ideas and began to design silhouettes. My fabrics will include chiffons, matte satins, marquisette mesh, organzas, knits, spiral steel boning, and more. After many rounds of sketching, I selected my six favorites. I then selected models, drafted all of my flat patterns, and constructed all eighteen garments I designed for the six outfits. I fit my garments to my models throughout the process. Lingerie

requires difficult techniques used in bridal gowns but there is a much smaller area to work with. I will be using new materials to me and I will be learning how to conquer a new category of garments. My talk on my collection, Venus, will capture to ethereal beauty of the ocean and remind us of how great the ocean can be with some much-needed care.

Wining & Dining Through Spain

Julia Wojciechowski, Jessica Dadswell, Erica Knudsen and **Natalie Minotti,** HTR 318: Cultural Tourism
Faculty Mentor: Professor Kathleen O'Brien, Hospitality and Tourism

One of the greatest attractions in Spain is its eating and drinking culture. Iberia is famous for tapas bars and cafes. Considering the land mass is surrounded by water, there is an enormous market for fish and seafood. So, what role does authentic food and beverage play in the travelers' cultural experience? While on a short-term study abroad program through Spain, we will research, identify and experience food and beverage trends. Our team will collect qualitative information by making entries about our food journeys and take photos every day. Our goal is to come to know and enjoy all the staple foods of Spain and better understand how and why food is an expression of cultural identity. In Buffalo, food and beverage brings people together. It will be interesting to experience and compare the role of food and beverage in Spain to what we're used to here in New York. We will report on the cooking of traditional foods as a way to preserve a country's culture as time goes on. We are excited and eager to learn about the cuisine of Spain.

Wish You Weren't Here: Overtourism and its Impacts

Anastasiya Muzychko, HTR 318: Cultural Tourism
Faculty Mentor: Professor Kathleen O'Brien, Hospitality and Tourism

This qualitative research project will focus on a new and developing problem in the world of travel: overtourism. Travel has become easier and cheaper than ever. On average, over 8 million people fly every day. The trip that one tourist dreamed of is often shared with thousands of other travelers. How about that perfect spot you found for watching the sunset? Why not welcome hundreds of others to enjoy it with you? I will research the meaning of overtourism and examine its impacts on travelers' experiences in two cities, one in Spain and one in Portugal. A comparative analysis of personal experiences posted on social media blogs will lead to a basic understanding how overtourism impacts travelers. The research findings may have implications for popular tourist destinations in the future.

Communication and Humanities

Comparative Analysis of Blackface Sentiment

Chevon McGarrah, COM 590: Communication Data Analytics
Faculty Mentor: Professor Ann Liao, Communication

All over the news this year, there were several instances where political figures were exposed for wearing Blackface in the past. While some people consider Blackface as extremely racist in 2019, others believe that it is not. Some people feel that the time period, or age when the person wore the Blackface (in high school over two decades ago) does not matter, and Blackface is still an unforgivable offense. Others feel that the offense should be forgiven for a myriad of reasons. This project will be a comparative analysis of YouTube comments of two major news networks, CNN, and Fox News, to examine the sentiment of the commentators towards Blackface. The videos chosen will either be the most watched, or the most relevant to the topic. A sample of the comments will be chosen for analysis, and coded according to sentiment and themes. This project aims to answer whether or not Blackface is still deemed offensive in present time, if the commentators were or were not forgiving of the political figures' past usage of Blackface, and what themes or sentiment were most prevalent within the data collected.

Content Analysis of 2019 Super Bowl Commercials

Blake Hamilton, COM 495
Faculty Mentor: Professor Ann Liao, Communication

There were over 50 commercials that played throughout the Super Bowl this year, and for a 30-second slot, companies were able to broadcast their products to 16 million eyes at once. Some people watch the Super Bowl just for the flashy commercials and halftime shows. One trend that remained prevalent throughout the commercials was the deep and evolving connection our society has to our devices/robots. In many of the commercials, we see examples of our fascination with robots doing human functions, devices making our life easier, devices protecting us and devices being able to connect us. I will be using critical frameworks of mass media, theories of mass communication, and rhetorical criticism tools to analyze the commercials.

Curating the Perfect Life on Social Media: Running from Reality

Jade Young, COM 450: Communication and Society
Faculty Mentor: Professor Michael Niman, Communication

Social media has drastically morphed the way that humans perceive themselves and others. We have become a culture that obsesses over making our lives appear to be as cool or cooler than those around us, thus curating this idea of a perfect life to show to the rest of the world. The way that a person and others can show their life being much more glamorous than it is can be damaging to the way that the one perceives themselves. Reflecting on how this warps a person's mind and perspective, we must encourage teens who are using social media to be aware that the "glammed up" lives that they see are not an accurate depiction of reality. My research investigates the consequences of adolescents who have developed a negative self-image due to social media. Throughout this investigation, I have reviewed research done by scholars and interviewed both young adults and professionals to contextualize the negative effects of social media on self-image.

The Discovery Doctrine: Historical Influences and Literary Implications

Jessa Matteson, English
Faculty Mentor: Professor Tim Bryant, English

The triad of court cases under Judge Marshall—Johnson v. M'Intosh (1823), Cherokee Nation v. Georgia (1831), which initially led to the Trail of Tears, and Worcester v. Georgia (1832)—provided Anglo-American colonizers justification for claiming indigenous lands and framed the legal basis of the Discovery Doctrine. Law professor Howard R. Berman speaks to the lost nuances of these court cases in "The Concept of Aboriginal Rights in the Early Legal History of the United States." Christian Nationalism also played a key role in the cultural enforcement of Discovery Doctrine principles, as, attorney Steven Paul McSloy explores in "Because the Bible Tells Me So: Manifest Destiny and American Indians." Co-founder of the Indigenous Law Institute Steven T. Newcomb argues that this trilogy of court cases links the Discovery Doctrine and Christian Nationalism directly to the appropriation of indigenous lands. I adopt these complementary lenses of case law and cultural ideology to interpret the significance of contemporary Native American literature. Anna Lee Walters's short story "Buffalo Wallow Woman" illustrates the long-term ramifications of this history on Native cultures and peoples today. In contrast to the impersonal consideration of Native populations in Supreme Court case law, this literature grants a finer understanding through attention to personal experience, counter perspectives, and human impacts. Legal influences are thus informed by their personal, social, and contextual ramifications. In Walters's work the reader can

recognize various effects of the Discovery Doctrine, including dislocation in the world, loss of community, and mental illness. Through the work of Anna Lee Walters, I present the importance of understanding the interconnections within this crucial part of history.

Documentaries Addressing Race in America

Gabriel McQueen, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

Societal values and morals are different depending on who you are, the type of status you bring to the world, and your connections or power that determine how society thinks of you. In life, everything is not easy, and everybody is judged differently, especially when it pertains to the color of their skin. My research examines two documentary films that not only express the different lifestyles of people, but the trials and tribulations they go through when society imposes negative views on them. "Central Park 5" (2012), directed by Ken Burns, Sarah Burns, and David McMahon, and "Minding the Gap" (2018), directed by Bing Liu, are two fascinating documentaries that demonstrate different attitudes and judgements of race and class in different circumstances, communities, and decades. The five young men unjustly arrested and jailed for a crime they did not commit are portrayed in "Central Park Five," and stand in contrast to the three young men coming of age in violent homes in "Minding the Gap." But all share a struggle with their circumstances, and face the fact that as much as America has come a long way, slavery, segregation, and racism are still present today. The documentaries highlight that racism, and they also reveal that societal views and morals are visited upon the subjects in the documentaries. The analysis of these films will helps the audience understand what these young men go through on a day to day basis, and that even when they are faced with a tough situation, they persevere.

The Effects of Social Media on Non-profit Businesses

Chelsea Raab, COM 401: Applied Communication Research
Faculty Mentors: Professor Katharine Hubbard,Communication and Professor Michael Johnson, Modern and Classical Languages

For this research project I will be looking at the effects of social media on non-profit businesses, specifically Leadership Buffalo. This project was completed as a requirement for my COM 401 research class. I used a variety of methodologies such as a focus group, survey, and content analysis to come to my final results and recommendations. I specifically looked at Leadership Buffalo's Facebook and Instagram pages and analyzed the way in which they were used, how much engagement each post got, and the number of followers each page has. I initially hypothesized that Leadership Buffalo's Facebook page was more beneficial, however was proven wrong after completing my research. I plan on presenting this research in the form of a PowerPoint presentation. I will discuss key points in my research, going over each methodology, how it was used, and the conclusions I drew from them. I will also discuss the key recommendations, such as making sure they post at least 3 times per week, I have for Leadership Buffalo after completing this research.

Epistemic Utility of Depression

Marisa Marinelli, HON 400: All College Honors Colloquium
Faculty Mentors: Professor Leigh Duffy, Philosophy and Professor Michael Johnson, Modern and Classical Languages

I will discuss whether or not the logic of someone suffering from depression is fallible or sound. I will then argue that depression, as a mood, can act as a vehicle towards truths about human nature and insight on how to live a better life, in a way in which those who do not suffer from depression cannot access. I will specifically discuss insights regarding the arts, as well as depressive realism. The concept of depressive realism comes from a study conducted by Alloy and Abramson, and refers to the idea that those who suffer from depression have a more realistic view of themselves and their power. Therefore, depression may have epistemic utility in human life.

Examining the Effect of Media-Driven Stereotypes on Identity Formation Among People of Color

Madisen Akpovwa, COM 450: Communication and Society
Faculty Mentor: Professor Michael Niman, Communication

University of Illinois at Urbana-Champaign communication professor Travis L. Dixon argues that if all you know about Black families is what news outlets report, you are likely to think African-Americans are overwhelmingly poor, reliant on welfare, and are absentee fathers and criminals, despite what government data shows. Color of Change, a racial justice organization, and Family Story, an advocate of diverse family arrangements, argue that many media outlets consistently portray Black families as dependent and dysfunctional—while White families are more likely to be depicted as sources of social stability. Many studies document how wrongful media portrayals of African-Americans on television can lead to real life stereotypes and negative perceptions. This perpetuated ignorance affects both white folks and people of color, including the Black victims of such reporting, giving some African-Americans a distorted view of themselves. My study explores how these negative portrayals often affect decisions people make such as where to live, attend school, and even the stores they patronize. I provide examples from articles, documentaries, interviews and studies documenting

the reality that false interpretations of African-Americans lead to dire consequences for society. My interviews with mixed race individuals examine the shows they watch, the perceptions they receive from them, and if they believe those perceptions to be true or false. My study also assesses how these individuals selected the schools they attend, and the areas they live in. My study attempts to make a connection between these distorted views and decisions to live and study in segregated communities.

Fighting for Independence: The Filmmakers Journey

Zachary Hatrick, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

This research looks into the production of both low budget and big budget films and the effect their development, production and distribution have on the personal lives and psyche of filmmakers spearheading these projects. I will primarily use the lives of independent director Mark Borchardt as documented in Chris Smith's film, American Movie, and mainstream director Terry Gilliam as he appeared in Keith Fulton and Louis Pepe's film, Lost in La Mancha. Borchardt endured considerable financial battles to initially finance his low-budget horror movie, while Gilliam's well financed production suffered major setbacks during production. In addition to analyzing the two documentary films, the study draws from autobiographical books, articles, and interviews. In the findings, it can be seen that both big budget and independent productions have their own challenges that take significant tolls on the individuals and their films. The in-depth analysis of the documentaries also reveals storytelling techniques and differences in the representation of the film directors.

Film Presentation: "The Man"

Liam Peterson and **Zac Wiencierz,** COM 495
Faculty Mentor: Professor Meg Knowles, Communication

"The Man" is a short, narrative film in the Neo-Noir genre, written and directed following research into independent film-making from the 1920s to today, including the influences of the Avant Garde, European Art Cinema and the American Independent Movement. Visual ideas such as those found in Truffaut's "Jules & Jim," Cassavetes' "Killing of a Chinese Bookie" and Richard Price's "Donnie Darko" are incorporated into the film. The Neo Noir genre includes high contrast lighting and desaturated colors, with an emphasis on the setting, costumes, and mise en scène that results in an outsider's view of an unsettling world. The plot of "The Man" involves a hitman living in his own psychic illusion of a 70s world, who is haunted by that strange reality. When his day job becomes too personal, he is forced to make a tough decision. Does he make the hit on a past love, or face the consequence of saying no? The focus relies primarily on the visual manifestation of the actor's emotional portrayal, rather than a reliance on dialogue, thus showcasing a deeper, more realistic human emotion. In addition to minimal dialogue, the film presents a surreal look at this character's life through elements such as the camera angles, lighting, set and costume design, all revealing significant aspects of the character's inner life.

The Fluidity of the Diasporic Identity in Rosario Ferré's "The House on the Lagoon"

Bianca Gonzalez, Philosophy and English
Faculty Mentor: Professor Lorna Perez, English

In this paper, I analyze the symbol of water in Rosario Ferré's "The House on the Lagoon." I argue that water represents life, and that the disruption of social structures, which is represented by literal structures in the text, produces the diasporic identity, or a fluid identity which is the combination of the cultural national identity of Puerto Rico and the cultural and political national identity of the United States. Quintín Mendizabal, a descendant of Spanish conquistadors, represents the identity of the colonizer; he searches for structural power in social systems. Petra Avilés, the descendant of a powerful West African chieftan-turned-slave, represents the identity of the founder; she is a member of the Afromestizo population and is the mark of Puerto Rico's unique cultural national identity. Willie Mendizabal is the product of Quintín raping Petra's great granddaughter and represents the diasporic identity; he transcends the violence that structure imposes on those in the foundation, and by doing so disrupts structure entirely. Willie is the only main character who is seen as being multiracial, and is one of the few characters who moves from the island to the mainland. He acknowledges the shortcomings of the commonwealth status while also appreciating his American identity. When the island no longer becomes a place he can call home, Willie still has the potential to find home in the mainland. Willie's diasporic identity is like water, which can be contained by a variety of structures, but which ultimately exists independently of all of them.

Fraudulent Love and Misogynistic Sympathy in Hawthorne's The Blithedale Romance

Jenna Woodcock, ENG 322: Representative Writers
Faculty Mentor: Professor Allison Siehnel, English

Fascinated and puzzled by the final statement of Nathaniel Hawthorne's novel, The Blithedale Romance, I sought to explore how the novel's narrator Miles Coverdale represents Hawthorne's continued investigation of gender relations and male dominance in the nineteenth century. My research began with the question of how Hawthorne's use of narrative and point of view contributed in significant ways to his representation

of social deviance and unconventional gender roles and relationships. The scholarly work of Gloria Chasson-Erlich and Robert S. Levine along with feminist arguments of Hawthorne's compatriot Margaret Fuller introduced me to the complications derived from the conventional ideas about social deviance and the role of sympathy in promoting human rights (conventions that are still present today). Through these works I developed conclusions about Hawthorne's exhibition of the deeper flaws of early American feminism. These conclusions and my complete thesis are what I will be sharing in my oral presentation. My thesis argues Coverdale is the looking glass through which we bear witness to American misogyny as our narrator performs what Levine defines as sympathy that appropriate others' suffering and the grievous consequences of such normalized action. Ultimately, Coverdale's final declaration being of love for Priscilla is awkward and un-poetic, which is unlike the rest of his narration. I argue this declaration reveals Coverdale's unsuccessful attempt to escape his deeper pain and guilt over the suicide of Zenobia, Hawthorne's representative feminist and the deviant woman, whom Coverdale did love but who threatened his masculinity. Coverdale's denial represents the broader misogynistic definitions of manhood and femininity existing in the nineteenth century that Hawthorne brings to light in choosing this ironic, abrupt but tragic conclusion.

"Free Solo" And "Touching The Void:" Comparing Epic Climbers

James Carapetyan, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

This study shows the similarities and differences between two documentary films: "Free Solo" and "Touching the Void". This analysis dives into the representation of the dangers of mountain climbing and the stakes of the entire process. The brave men and women who climb mountains, in a sense, risk it all for a passion they can't describe. The audience is taken on a journey of the highs and lows of climbing a mountain. We want to see a depiction of climbers who reach not only the top of the mountain but the top of their goal and dream. "Free Solo" (2018) is an Oscar Winning Documentary film that has impacted a wide range of audiences throughout the world. Many writers have covered the journey of Alex Honnold, including ESPN 60, and the film will be contrasted to the written story. "Touching the Void" (1999) shows the drive that climbers have for something they love no matter how dangerous or life threatening. The suspense we see in both films increase the tension and the character studies of the main climbers are what makes these films so intriguing. Both of these films require a skilled and fearless film crew and a careful directorial vision. The techniques used by the two groups of filmmakers, cinematographers and editors are also explored.

"Hoop Dreams:" A Documentary Analysis

Joshua Fox, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

This research project presents an analysis of Steve James' 1994 documentary film "Hoop Dreams," which explores the social problems encountered by young black males who are heavily affected by their community, hurting their chances to succeed in society. The film demonstrates the effects of low-income housing, which can limit the ability of young people to fulfill their potential for success. The analysis focuses on a deep look into black culture and how the system is set up unfairly. I bring attention and awareness to what really goes on in Chicago by comparing "Hoop Dreams" to the "30 for 30" documentary "Benji". Both are based in the streets of Chicago. Both films specifically utilize visuals to paint a picture of what happens on a daily basis. Similar time frames in both films reveal a cultural phenomenon during this period, which continues to have an influence today. This topic needs to be addressed because younger generations don't have a clear perspective on the past and how it has an effect on them. This research shows that the past has influence on everything that is happening in present day.

How Social Media Has Encouraged Conversations about Sexual Assault

Jade Young, COM 389: Communication Data Analytics
Faculty Mentor: Professor Ann Liao, Communication

In the last few years, we have seen a rising number of sexual assault accusations surface in the media. There have been many accusations against prominent people which has resulted in discourse among those who are either supportive, critical, or impartial of the accused. The conversations, most specifically, have occurred on social media, which provides a unique platform for examining cultural conversations surrounding sexual assault. My research consists of scraping social media comments using Python and performing content analysis to contextualize how social media platforms have been utilized to encourage discussions about sexual assault and harassment.

"How to Die in Oregon:" Arguments Regarding Assisted Suicide

Maria Perna, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

My research analyzes "How to Die in Oregon," a 2011 documentary directed by Peter Richardson supporting assisted suicide or euthanasia. Oregon passed the law for physician-assisted suicide in 1997 through the Death with Dignity Act. Presently, physician-assisted death or "aid in dying" is legal in eight states including: California, Colorado, District of Columbia, Hawaii, Montana, Oregon, Vermont, and Washington. The film introduces several terminally ill patients who want to feel like they have control over their lives and want to have the choice to

end their pain. We see old people who prefer to die in a room full of loved ones rather than suffer in pain and wither away. The film is advocating for laws supporting assisted suicide to be passed nationally. The people choosing death are very sure of their choice up until their final moments. Through the stories shared in this film, we see what terminally ill patients are forced to suffer with. Dying can be torturous and people don't want to end their lives that way. This is a controversial topic so this paper evaluates the arguments presented by the film for and against legalizing physician assisted death in the United States.

The Impact of Social Media and the Internet on Brand in the Dining Industry

Kelsie Engert, Public Communication
Faculty Mentor: Professor Katharine Hubbard, Communication

My research deals with the impact of social media and the Internet on the success of a brand or company. More specifically, I examine the food and dining industry, both locally and nationally to compare social media and Internet use (including apps), trends in sales and their audience breakdown in the past 20 years. As part of my research, I have surveyed consumers of both local and chain restaurants to find out how they are using social media and the Internet to interact with brands and companies, specifically in the dining industry. I will also be sharing interviews and input from local restaurant owners to discuss how they are using social media, websites and apps to communicate with their audience and to build their brand, and ultimately, how it has affected their business. In addition, I will discuss my conversations with local news/media companies, to discuss with how they are using their own websites and social media accounts to promote local restaurants to their audience. I will also be presenting research that I have gathered from experts on the topic, as well as interpreting data and analytics from larger chain restaurants, and comparing it to local restaurant branding through online advertising. Subsequently, my talk will reveal how this new phenomenon has changed the course of the food industry, and brands in general.

Is This Show Fake?

Priscille Mputu, COM 389: Communication Data Analytics
Faculty Mentor: Professor Ann Liao, Communication

This project is about how the media uses sensationalism to attract their audience and how far they can go to achieve their goals. I will specifically focus on the national TV channel «TLC» and on one of their episodes of "My strange Addiction." In one of those disturbing episodes, the one that got my attention, a woman addicted to air freshener was featured. I will go deeper into the chemicals that goes into air fresheners and how that can be deadly. I will use Python to scrape audience comments from YouTube to see whether this channel has achieved its goals.

Luck of the Draw

Alexis Abramo, TFA 420: Producing Short Films II
Faculty Mentor: Professor Aaron Daniel Annas, Communication

Luck of the Draw is a short film that takes a turn from traditional romantic comedies by depicting someone who does not need to be in a relationship to ultimately be happy in life. Throughout my process of writing, producing, and directing this film, I want to make the interactions seem genuine between characters and the shots seem compelling to the audience. Various shot selections will repeat and "over the shoulder" shots will be used to show the stagnant world my main character lives in and how he is closed off as a person. As my character develops into a selfless person, the shot selection opens up to shots such as "two shots" that show growth. While writing this script, I wanted to incorporate my main theme with a somewhat supernatural concept of luck. While infusing luck into the story, I am able to show my character growing through the experience of using his luck for good instead of continuing to be selfish. The ability for my character to experience personal growth and develop into a selfless person allow for a unique concept. Not only are my characters relatable, but this short film offers a comedic genre with down to earth themes that offer a new perspective on personal growth.

Making a Celebrity: From Belcalis Almanzar to Cardi B

Caitlyn Bullock, COM 450: Communication and Society
Faculty Mentor: Professor Michael Niman, Communication

My research examines the celebrity's rise to stardom in the age of social media, with my analyses focusing specifically on artist Belcalis Almanzar, better known as Cardi B, an American rap sensation who has enjoyed an almost unprecedented meteoric rise to stardom. From stripper and Instagram comedian in 2013, to reality star in 2015, Cardi B had her debut single reach number one on the Billboard Hot 100 charts by 2017. Revitalizing female rap, Cardi B became the first solo female rap act to rank number one on the Billboard Hot 100 since Lauryn Hill in 1998. She now has a record-breaking three number one hits, and seven top ten hits and has established brand deals with companies as big as Amazon. Cards B has made history as the first solo woman to take home the Grammy for Best Rap Album, and she did so in her first year being nominated for the award. Her surprise landing in the industry does not negate the fact that she is here to stay. Her resilience to industry turnover has only been reinforced by her many appearances at A-List events like the Grammy Awards and the MET Gala. This paper examines how the artist has mastered the art of self-branding and may have created a blueprint for up and coming stars-to-be that will soon follow.

Mental Picture

Stephanie Moran, HON 400: All College Honors Colloquium
Faculty Mentors: Professor Tammy McGovern, Communication and Professor Andrea Guiati, Modern and Classical Languages

The statistics surrounding mental illness in America are staggering, yet stigma and misinformation remain major obstacles to people getting the help they need. Studies have shown that education and awareness help to decrease stigma and increase positive attitudes towards people who live with a mental illness. Mental Picture is a multimedia project designed to combat the stigma surrounding mental illness and related issues. My goal is to combine media skills I have learned with my own experience with mental illness. Mental Picture spans many platforms, including Twitter, YouTube, and Instagram. The various platforms are used to reach as diverse an audience as possible. Blogs are written about topics relating to mental illness, and are promoted on the social media accounts. Videos on YouTube may also relate to the blog topics and add a more personal element to the brand. With Mental Picture, I hope to show people who are struggling that they are not alone and encourage them to talk about their own mental picture through learning about mine. I also hope to widen the discussion surrounding mental illness and demystify the conversation. The main website was designed and coded completely from scratch, using Adobe Dreamweaver. All artistic work is original, with pictures and videos shot with a Canon Rebel T5i.

Modern Technology Brings Us Individualized News

Kyle Fallon, COM 450: Communication and Society
Faculty Mentor: Professor Michael Niman, Communication

The advancement of technology has changed the way that people receive and view news. My review of current research documents suggests that it's no longer about sitting down for the six o'clock news, it's about sitting down whenever one is on the phone. With "news" streaming websites continuing to grow, more people are opting out of cable. People like to get to know their reporters and anchors and this is done through following them on social media. This makes the news personalized to which journalist each individual likes as well as all their social media profile's data. People log on to social media to get the news from the people they like, and don't see other people's points of view. This is demonstrated when news editors demand that reporters cultivate relationships over social media. Journalism professors encourage students to cultivate large followings to enlarge their web of influence. People feel special when they see their reporters on social media because they view them as a friend, not just someone random on tv. I argue that people are going out of their way to view news, but it's also very easy to share fake news on social media. I then argue that this move exposes the audience to an increased amount of propaganda.

O.J. Simpson: A Life of Abuse

Charles Hanifin, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

My paper explores the life of O.J. Simpson. By analyzing the Oscar winning 2016 documentary "O.J.: Made in America," directed by Ezra Edelman, I examine how the documentary represents the troubles of former football star O.J. Simpson. I report on critical reception of the film, and perspectives on the treatment of this larger-than-life figure. I explore the documentary's introduction of the psychological aspects of Simpson's life and celebrity, and the events that led up to the murders of Simpson's wife, Nicole Brown Simpson, and Ronald Goldman. This paper also looks at the documentary's perspective on abusive relationships and how they affect people. The coverage of the trial is also an important part of my topic, since it is significant that it divided the country and became more about race than the actual facts. This paper will not only cover the presentation of Simpson's life but look at the bigger picture especially the faulty trial and its representation in the media.

"Persepolis:" A Documentary or Cartoon?

Fanchon H. Drayton, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

"Persepolis: A Documentary or Cartoon?" is a short podcast exploring the film "Persepolis" (2007), by Marjane Satrapi. This short audio documentary analyzes and determines whether this autobiographical graphic novel detailing the experiences of a young woman in Iran during the Islamic Revolution of the 1970s, turned documentary film, is a true documentary or if aspects of an ethno-biography or a graphic novel create another film form. These questions are examined through the analysis of "Persepolis" and another documentary film that uses animation to tell life events during the war in Lebanon: "Waltz with Bashir" (2008) by Ari Folman. It discusses critical reception of the two films, and presents interviews with both film professionals and those with personal life experience with the wars in the middle east during the 70s and 80s. The podcast focuses on the main idea: is this form a documentary because of the general knowledge we have of documentary or something else entirely by including animation and other ethnographic qualities.

Positivity Breeds Positivity—A Study on Social Media's Influence on Behavior

Mohammad Haque, COM 389: Communication Data Analytics
Faculty Mentor: Professor Ann Liao, Communication

Most students use the internet to connect with others. The power of social media enables people to follow the behavior patterns of those that they tend to follow. This is mostly seen in a negative light from things like the Cinnamon Challenge, swatting, hive mind behavior, etc. The one thing that gets

easily overlooked is the positive effects of social figures in social media. This study intends to explore how people on the internet (specifically YouTube) react to others being popular. Using python scripts and data categorizing techniques the study will assess the positivity level of several videos. Preliminary testing shows that on videos with a positive message or a public figure that has a positive outlook the comments tend to stay very much positive. Even when they are being criticized the comments are usually constructive. With these preliminary results one can see that positivity created by public figures do affect their audience, and in this study more videos and figures will be explored in order to see if there is indeed a correlation between positivity and positivity.

Purpose in the Personal Documentary

Conrad Burgos Jr, SPC 426: Documentary Film Analysis
Faculty Mentors: Professor Meg Knowles, Communication and Professor Dorothea Braemer, Communication

This 7-minute podcast explores documentary film and media production as a means of documentation, healing, and self discovery. Personal documentaries can have a narrow, individualized scope, or broader scope that involves socio-political context. This project explores what motivates filmmakers to document their own moments of intimacy and indictment, and how the process of making these films affects their lives. Through the films of, and interviews with Dorothea Braemer and Meg Knowles, we engage a broad spectrum of humanity: revolutionary progressive frameworks, family stories, and existential purpose. Films included in the podcast discussion are Braemer's "Ten Short Documentaries about My Childhood Home" and Knowles' "Walk" and "Runaway" amongst others. I ask, what specific insight does the filmmaking process give us about our experiences? Who is the intended audience of the personal film, and what do we expect from that audience? When we make these films, what do we expect from ourselves?

The Resurgence of Romantic Comedies

Devyani Sawant, HON 400: All College Honors Colloquium
Faculty Mentor: Professor Macy Todd, English

The genre of the romantic comedy flourished from the 1980s to the early 2000s. Romantic comedies—or rom-coms, as they are informally known—opened a new market for Hollywood and thrust actors like Kate Hudson, Meg Ryan, John Cusack and Patrick Swayze into stardom. However, film studios accustomed to releasing multiple films in this genre every year turned their focus away from rom-coms in the decade following the millennium. Recently, the release of the 2018 film Set It Up has reignited interest in romantic comedies, leading to a new sub-genre I have named "resurgence rom-coms." This presentation will compare the cinematic techniques, themes, and character development from the Golden Age of the romantic comedy to resurgence rom-coms in an effort to observe how the new genre evolved. The films from the resurgence to be studied include Crazy Rich Asians, To All The Boys I've Loved Before, and Mamma Mia! Here We Go Again. The presentation will compare the above-mentioned films to popular romantic comedies of the past such as She's All That, Mamma Mia!, Love Actually, and My Big Fat Greek Wedding. These films are considered iconic within the Golden Age of the rom-com, and my comparison will reveal how and why the genre has developed into its resurgence.

Safeguarding a Graffiti Subculture

Charles Leone, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

This study looks at the reoccurring presence of graffiti in our society and seeks to understand the factors that drive its existence as well as what determines graffiti to be considered art or vandalism. By analyzing the documentary film, "Style Wars" and contrasting it with popular belief as well as the opinions of local graffiti writers, we find that the art has different manifestations, which are often mistakenly grouped into a single category. We have found that there is a vast difference between what is considered "street art," what is "graffiti vandalism," and how these terms are often conflated or misconstrued. We also find that the artists have fluctuating motives for making graffiti including escapism, politics, injustice in society, and others. Through this research we can recognize the variance in these two forms of expression, how they are represented in this film, and better understand the individuals behind the painting on the wall, their views, lifestyle, code of conduct, motives, and obsession with the art of vandalism.

Skimming Through YouTube Comments

Brendan Allman, COM 389: Communication Data Analytics
Faculty Mentor: Professor Ann Liao, Communication

For this research I have taken a video from YouTube titled "Youtube is Facilitating the Sexual Exploitation of Children, and it's Being Monetized" and analyzed over 1,000 comments trying to find out how effective it is to have a debate in the comment section of a video and what ideas can actually be spread. The comments will be taken from the video and run through Python to be sorted into an Excel file. Comment sections across all forums have been gaining attention and more debate about current issues arise in them, I want to see how effective it can be to have a debate in the comment section. The presentation will include a talk about the process of sorting the comments and how internet trolls can affect and derail arguments.

Teens in Pornography: A Documentary Analysis

Kaelon Givens, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

This research project examines the documentary "Hot Girls Wanted" (2015), directed by Jill Bauer and Ronna Gradus and produced by Rashida Jones. It will study the portrayal of the industry of teen prostitution, as it takes a toll in the United States. The film takes as its subject young teenagers who are lured to Florida to work in the pornography industry, making videos that feature immature girls and older men. The documentary reveals that many of these young women were inexperienced and are used in a specialty niche of amateurs in the industry of porn. These underage girls initially see this as an opportunity to experience "freedom," as they won't have to go to college and can make money very easily. The study finds that the film presents the porn industry as a manipulative force in the lives of these young girls. Further, the internet pornography industry is driving this type of victimization of young women due to the proliferation of pornography on the internet. The project finds that the media drives a new form of slavery.

Triumph of the Will: A Documentary Podcast

Justin Lamont, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

This documentary podcast focuses on Leni Riefenstahl's 1935 film "Triumph of the Will" and how it portrayed Adolf Hitler and the German citizens. I will address the critical reception to the film, both in the 1930s and today, and its use as an instrument of propaganda. The podcast also addresses the Treaty of Versailles, and how it set the stage for Hitler's rise, as well as Hitler's autobiographical manifesto, Mein Kampf, and its influence. Professor Daniel Blum at Buffalo State College is interviewed to provide insight into what the German citizens went through after the end of World War I up until Adolf Hitler became the ruler of Germany. This analysis shows that the ideology expressed in Hitler's book drives Riefenstahl's film and is presented through compelling visuals and audio. The podcast examines Riefenstahl's portrayal of Hitler, both as he speaks and is shown descending from the clouds into Germany like a God.

The Unbreakable Rachel Lopez

Ashley Stiles, ENG 416: Eighteenth-century Literature
Faculty Mentor: Professor Lisa Berglund, English

This is an eighteenth-century creative writing project conceived within a loose guideline of parameters set by Dr. Berglund. The project is a descriptive narrative through the execution of letters and extensive research on eighteenth-century London. The purpose is to educate the reader on London in a time when societal norms for women were more restricting than today through the perspective of a woman named Rachel Lopez who was raised by a Jewish former lady's maid and her musician father. This creative writing dramatic piece specifically discusses a protagonist's struggles with gin addiction and other unforeseeable societal pressures while discussing factual events and real historical figures in the letter-style narrative. There is a subtle balance of comedic relief to counter many intensely dramatic moments while astonishing expectations with plot twists as the heroine grapples with various climactic events. The subtle use of comedy is a tool utilized to help mask the potential, underlying mental pressures that eighteenth-century London imposed upon a young woman and cultural outlier dealing with many social struggles.

Views of the Dreaded Online Social Media Influence: The Momo Challenge

Porsha Coaxum, COM 590: Communication Data Analytics
Faculty Mentor: Professor Ann Liao, Communication

Social media has been effective spreading news, creating trends, building brands and much more for years. People, businesses, and organizations have capitalized on social media's reach by releasing messages to target individuals based on their interests and personalities. Some of the most primitive social media challenges date back to the early 2000s. Whereas some were positive and designed to bring awareness to illnesses and important issues like the ALS, some challenges were hazardous and became viral simply for comedic reasons; like the teen tide pod challenge and the cayenne pepper challenge. The latest challenge, called the Momo Challenge, targeted children. The challenge involves images of a character sculpture created in Asia called Momo. Many are unsure if the Momo Challenge is real or a hoax, but families were very concerned. Momo allegedly would pop up in the middle of random YouTube Kids videos, telling children to do dangerous things behind their parents' backs. Rumors of the Momo Challenge started in Europe but eventually migrated to the US In February 2019. CBS did an interview with a mother who says her daughter was exposed to Momo while viewing a YouTube video. YouTube Kids has since removed all child content with Momo's face from the site. For this research, I will scrape viewer comments from the CBS interview and examine their views about the Momo Challenge with emphasis on the type of emotions they exhibit through positive, negative or neutral feedback.

What Is Real? A Documentary Analysis of "F For Fake"

Brian Verso, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

This research paper discusses what claims Orson Welles documentary, "F For Fake" (1973), makes about art and film. It also explores the history of the only documentary made by the auteur some claim to be the greatest filmmaker. "F For Fake," a film Roger Ebert called "a film about fakes and frauds," and Orson Welles' most personal film, is in some ways the most raw form of Authorship. It is equal parts honest and dishonest. It is a documentary about lies, and Welles makes few promises that he has any intention to tell the truth. It follows several stories. On the surface, it is a documentary about Elmyr de Hory, an art forger. Soon, however, it breaks down to follow the fake biographer Clifford Irving, Welles' girlfriend Oja Kodar, Welles himself, and then contemplate the idea of art and "the artist." It approaches the idea that everything, even documentary, is a lie.

Where Have All the Materials Gone? Tracking Recyclables Amidst Crisis

I'Jaz Eberhardt, COM 389: Communication Data Analytics
Faculty Mentor: Professor Ann Liao, Communication

Since China declared its intent to ban 24 solid waste materials in a filing with the World Trade Organization in 2017, the nation has been in a "recycling crisis," meaning there is a surplus of recyclable materials in the US that are now being thrown away instead of going towards repurposing initiatives. Despite these findings, the City of Buffalo continues to pursue its 34 and More initiative of surpassing the national recycling rate of approximately 34 percent. I plan to compare recycling and waste rates in Buffalo to determine if recycling has been affected either positively by the 34 and More initiative, or negatively by the recycling crisis. I plan to perform a mix of qualitative and quantitative research for my project. I will utilize resources such as Open Data Buffalo, the US Census Bureau and survey responses for data analysis to compare local and national recycling rates within the past three years. I also intend to conduct interviews with local residents and organizers of the 34 and More initiative for content analysis to gauge responses about the initiative and to prove its effectiveness or benefit (or lack thereof) to the city. Finally, I will determine if my results can help predict the future of recycling in Buffalo.

Why Prison Reform is Necessary: A Philosophical Perspective

Thomas Carr, HON 400: All College Honors Colloquium
Faculty Mentor: Professor Leigh Duffy, Philosophy

It is not difficult to understand the importance of correctional institutions to maintain a well-functioning society. This system must be based on a set of moral principles that ensures offenders are treated ethically while also deterring others from committing crimes in the future. Among the most prominent and sensible theories that can be applied to the system are John Stuart Mill's Utilitarianism and Immanuel Kant's Deontological ethics. Mill's Utilitarianism adheres to the Greatest Happiness Principle, which states that actions are right so long as they promote overall happiness to the greatest amount of people and wrong in proportion to the amount of pain or the absence of happiness produced. Kant states that right actions are done in accordance with moral duty; actions are only morally right if they are done according to a principle that we can universalize with consistency. If we apply these moral philosophies to the correctional system, it is clear that reform is necessary. In an effort to reduce America's alarmingly high recidivism rates, more focus needs to be placed in providing programs within institutions that provide meaning for the lives of prisoners. This would fulfill both Mill's and Kant's systems of ethics and increase the overall well-being of those both in and out of the system.

Why Was the 1946 Documentary, "Let There Be Light," Banned?

Matthew Luke, SPC 426: Documentary Film Analysis
Faculty Mentor: Professor Meg Knowles, Communication

My paper presents research on the filmmaker, John Huston, who directed the documentary "Let There Be Light." This includes his family background, his introduction to the world of film, his filmmaking style, and the time he spent as a Signal Corps lieutenant during World War II, making documentaries to support the war effort. Also covered is Huston's participation in the film memoir, and any personal obligation that led to making this film. "Let There Be Light" is a long banned documentary that sheds light on the effects of PTSD on soldiers who fought in World War II. It was made in 1946, but not released until the 1980s because the film would have negatively impact army recruitment. Furthermore, I show how "Let There Be Light" came to be released decades later and include the efforts made at restoring the film today. I will also study what the films tells us about PTSD and the authenticity of its portrayal of PTSD.

Wicked Glorification of a Killer

Devyani Sawant, COM 389: Communication Data Analytics
Faculty Mentor: Professor Ann Liao, Communication

Ted Bundy is a notorious American serial killer that assaulted and murdered multiple women in the 1970s. He was convicted and given three death sentences in 1979 and died on the electric chair on January 24, 1989. Bundy's trials were highly publicized, which gave him an almost celebrity status in the country. In recent months, there has been a renewed interest in Bundy. Netflix released a four-part documentary series titled "Conversations with a Killer: The Ted Bundy Tapes" in January 2019. The streaming service also acquired distribution rights to the latest Bundy biopic starring Zac Efron and Lily Collins. The trailer for the film—titled "Extremely Wicked, Shockingly Evil and Vile"—was released on January 25, 2019 on YouTube. Since its release, the trailer has received over 4.5 million views. However, audience members have condemned the film trailer stating that it glorifies Bundy with its use of upbeat music. Efron's casting as the serial killer has also been criticized. This presentation will analyze YouTube comments and tweets about the trailer to quantify audience response to the upcoming film.

Words Matter: How Ads Co-opt Language and Undermine Happiness

Sherice Barnes, COM 450: Communication and Society
Faculty Mentor: Professor Michael Niman, Communication

"Sticks and stones may break my bones, but words will never hurt me…" That used to be so true, but in today's society words are hurting us more than we know. My review of current research documents indicates that words manipulate our emotions, confuse us, control us, and enable our financial exploitation. In the end they leave us feeling powerless and emotionally drained. The research also shows that words can empower the existence of healthy human communities. We are the only living creatures to use words to communicate, which along with the urge for connection, obviously empowered our ability to survive and evolve socially. Words in advertisements often lead humans down a bad rabbit hole, associating powerful words like love, relationship and desires with products like food, apparel and cosmetic beauty products. Using current research, I argue that these tangible things never fully fulfill the need humans have for love, relationship, and agency. Words in advertisements have meanings deeper than the surface and the overuse and misuse of them can undermine ones understanding of these concepts, instead associating them solely with consumer activity, to never experiencing the actual meaning of these words. My work argues that this void caused by commercial media saturation can only be filled by true human connections, rather than consumable products. My work warns that the media plays an important role in the disconnect that many Americans feel.

Computer Information Systems and Engineering Technology

Arduino Control Home Automation and Security Systems

Johnel Rodriguez, Travis Osagie, Leslie Brown and **Jabryl Chin,** ENT 466: Electrical Design II
Faculty Mentor: Professor Ilya Grinberg, Engineering Technology

The issue of security is very important in our everyday lives. This document presents the background and design for a small security system that is affordable and portable. It can be placed anywhere to monitor places as small as a desk or as large as building. One of the biggest reasons people do not have security systems is because it's expensive and some people believe they don't need it. The objective of this project is to enable users to remotely monitor their home using a cell phone-based interface. A key part in this system is that you can monitor your home virtually by being anywhere across the globe. When movement is occurred a message will be automatically sent to your phone alerting the user of activity. To log in to view activity the user must create a unique email and password. When accessed the control unit will relay the commands to a microcontroller that would perform the required action and a return a completion status back to the user. To save energy the program goes into a sleep mode when no occurrence of movement is noticed for an hour or more. This project is targeted for consumers who wish to monitor their home remotely from their cell phones at affordable prices.

Automatic Projector Screen: No More Lost Remotes

Joseph Stahl, Ahmed Ali, Joseph Morgan and **Haowei Yu,** ENT 466: Electrical Design II
Faculty Mentors: Professor Ilya Grinberg, Engineering Technology, Professor Steven Barker, Engineering Technology and Professor Chris Weber, Classroom Support

Many of Buffalo State's classrooms contain manually operated projector screens. The goal of this project is to develop a fully automated projector screen that responds both to the projector being turned on and to user speech commands. The client demanded that current offerings on the market that utilize remote controls are undesirable due to classroom disruptions resulting from the loss of remote controls and batteries that require replacement. The project being developed is designed to be retrofitted on to existing projector screens decreasing waste. This is accomplished by developing a series of modules including a current sensing module, a speech recognition module and a control module. The current sensing module detects when the projector is active by measuring the current draw of the projector. It then transmits this information wirelessly to the control module through a RF transmitter. Likewise, the speech recognition module listens for and decodes user input and then transmits this information to the control module. The control module consists of a motor and an Arduino microcontroller. The microcontroller receives and processes information from the current sensor, wireless transmitter, and speech recognition modules and processes this information, which is sent to the motor to move the screen. The motor is directly coupled to the screen and used a Hall effect sensor to determine the position and direction of the screen. Limit switches are to be used to prevent the screen from traveling past predetermined limits. The automated projector design will eliminate distractions currently caused by manually retractable screens.

Data Acquisition System for a Mini Baja Race Car

Anthony Czapla, Nicholas Fago, John Mayer and **Amar Zainelabdin,** ENT 466: Electrical Design II
Faculty Mentor: Professor Stephanie Goldberg, Engineering Technology

Data acquisition systems (DAQ) have become increasingly important to the automotive industry in the design and development of safer and more efficient vehicles. DAQs have also found application in the motorsport industry, where vital vehicle subsystems can be monitored. The need to make data-driven decisions in a competition context extends to the Society of Automotive Engineers (SAE) Baja competition, in which the Technology Department participates. A software-controlled DAQ for the department's SAE Baja vehicle is the focus of our two-semester final design project for the Electrical Engineering Technology program's senior capstone experience. The DAQ will continuously collect and store data from sensors that monitor the suspension, clutch and engine temperature, engine rpm, vehicle location and speed, and chassis roll. Along with widening the vehicle's tuning capabilities, the DAQ system will add greater understanding of vehicle characteristics. The mechanical engineering students, who are designing the vehicle, will be able to see numerical data that corroborates their theoretical models and design with overall system performance. Initial prototyping of the system was done in a modular fashion, with hardware subsystems and associated software being developed and tested independently before integration into the larger system. The complete system was assembled on a work bench and functional operation was verified. The data acquisition system will be fully implemented on the SAE Baja vehicle in time for spring 2019 competition. Our poster session at the SRCC conference will highlight the design and test of the system.

Design Competition for Heating Ventilation and Air Conditioning

Tom Vullo, Madeline Kromer, Donald Schenk and **Shawn Whalen,** ENT 422: Machine Design II
Faculty Mentor: Professor David Kukulka, Engineering Technology

The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) holds an annual collegiate design competition for engineering students to design a Heating Ventilation and Air Conditioning system (HVAC). This year's competition includes calculating the heating and cooling loads of a four story medical facility addition in Budapest, Hungary. Design conditions to consider for HVAC systems include average outdoor temperature, humidity levels, occupancy, and building layout. ASHRAE design standards dictate all aspects of HVAC system design; standards exist detailing ventilation, climate zones, and energy standards. Other requirements needed are provided by the Owner's Project Requirements (OPR) and the ASHRAE 2019 Design Competition webpage. To complete the calculations required, an industrial standard calculation design program is used. The program calculates heating, cooling and ventilation loads of an HVAC system for specific time frames (hourly, daily, monthly). In order to have the required information for the program the surface area for each individual wall, window, and door in the building must be calculated. Aim of this competition is to encourage students to extend their knowledge beyond the core mechanical systems. Exceptional student design projects will be recognized at the 2020 ASHRAE Winter Meeting held in February in Orlando, Florida. Students submit a detailed report including performance calculations and supporting mechanical drawings to the competition for review.

Designing and Machining a Coupling Torque Mount

Jacob Papas and **Michael Pham**, ENT 422: Machine Design II
Faculty Mentor: Professor David Kukulka, Engineering Technology

FS-Elliot has been a leader in producing and designing industrial air compressors for over fifty years. Their centrifugal air compressors use a shaft coupling, which is a cylinder connected to two mounts at both ends. This coupling experiences a great amount of torque inside the air compressor. FS-Elliot needs a way to test the coupling to see how much torque it can handle without deforming or breaking before the part is put into their product. A fixture designed to simulate the torsional force the coupling will undergo, needs to be redesigned in order to make sure it can handle the forces in the air compressor. The new testing fixture needs to be adjustable to fit couplings of different lengths and diameters, and easy to use, so workers can use the testing fixture without too much trouble. Many designs were considered and modeled using 3D CAD software. Dimensions were assigned to allow the fixtures to accept the largest and smallest couplings. After the final design was agreed upon, parts were sourced to build the fixture and test it. This coupling torque mount will give FS-ELLIOT a working fixture that can test a range of couplings to ensure quality of their part. The presentation will show the design out in greater detail and have a 3D printed model of the design that people can interact with.

Enhanced Heat Exchanger Design

Benjamin Camille and **Kashish Chaliawala,** ENT 422: Machine Design II
Faculty Mentor: Professor David Kukulka, Engineering Technology

FS-Elliott is a global leader in the engineering and manufacturing of oil-free, centrifugal compressors with operations in over 90 countries. An air compressor efficiently converts the energy utilizing a series of stages to compress and cool the air as it continuously flows through the unit. In between each stage of compression, the air is cooled, and excess moisture is removed to further increase the efficiency and air quality. A heat exchanger is used to cool down the air in between stages. FS-Elliott's existing model is a shell-and-tube heat exchanger aftercooler, which is inefficient and requires replacement. There is a lot of stagnant air that does not have a viable circulation within the shell to make the system proficient. The idea of spiral baffle heat exchanger was explored which led to consideration of a helixchanger. A helixchanger is a high-efficiency heat exchanger that provides many important features including less shell-side fouling, higher shell side heat transfer, lower shell side pressure drop, reduction of vibration hazards, better two-phase flow distribution, reduced maintenance cost, reduced investment cost, increased process capacity and cost saving on total life cycle basis. The implementation of a helixchanger in FS Elliott compressors will increase the heat transfer coefficient, which will increase efficiency of cooling the air, improve the flow of air, reduce dead zone, as well as reducing the maintenance cost due to low fouling factor and ultimately reducing the overall operating cost.

The Impact of the Internet on Computer Programming

Jeffrey Edbauer, HON 400: All College Honors Colloquium
Faculty Mentor: Professor Charles Arbutina, Computer Information Systems

The internet has had a profound impact on the way people learn how to program and do computer programming. This research delves into the impact, whether positive or negative, the Internet has on computer programming. Data was collected using a custom survey with various questions on the topic of using the Internet in conjunction with computer programming. The questions were a mix of personal experience questions and

opinion questions, with a combination of both multiple choice and short answer. The survey was created using Google Forms so it was easy to distribute and participate in, as long as Internet access was available. The survey was distributed to various Computer Information Systems classes for the students to answer, as well as posted on various online forums to get a variety of programmers to take the survey. The results were collected and analyzed to find any patterns that may or may not have emerged from the survey. These results were used as input to graphs to substantiate the findings. We expect to find that the Internet has made computer programming more accessible to learn and fix problems, but has also made programmers more reliant on solutions they do not fully understand.

PCB Piezotronics Oven Cable Support Fixture

Kyle McGuire and **Maxim Sokolov,** ENT 422: Machine Design II
Faculty Mentor: Professor David Kukulka, Engineering Technology

PCB Piezotronics was founded in 1967 in Depew, New York. PCB is known worldwide for manufacturing many various sensors of great accuracy and dependability. PCB manufactures quartz sensors, accelerometers, and various other mechanisms to measure dynamic pressure, vibration, and force. PCB's success began with creating circuitry that is more user friendly and the ability for the sensors to be used in various environments. Growth of the company allowed it to expand and manufacture piezoceramics; various strain gage sensing technologies; pressure transmitters, and calibration equipment. Purpose of this design project is to create a fixture to allow insulation to be tested at temperature within a Vulcan oven. PCB uses ovens to perform tests on various types of cable sensors. Design requires that cables not be in contact with interior of the oven. Additionally, apparatus must be designed and implemented to ensure technician has physical access to control display of oven, and to have ability to test each sensor. Currently, a wire is woven through the cables and secured to the oven which holds the cables in place. Overall, the design will ensure it becomes easier for technician to test cables. Fixture is adjustable and is easy to use. Design of an oven cable support is important to ensure that customers receives quality products in a timely fashion.

PlanCatcher: A Daily Planner iOS App

Aierfan Maierdan, Computer Information Systems
Faculty Mentors: Professor Neal Mazur, Computer Information Systems and Professor Sarbani Banerjee, Computer Information Systems

In the modern world, time management has been a significant part of everyone's day-to-day lives. Specifically, many people experience the pressure of having multiple deadlines and are not able to manage their time, prioritize their work, and keep track of their progress. In this research project, an iOS App entitled PlanCatcher was developed for the iPhone environment using the Swift programming language and XCode to help users track and monitor their daily, monthly and yearly plans and tasks. This App allows users to accomplish their tasks by tracking current progress, setting start and end times, organizing tasks by categories, managing repeating tasks, and ordering tasks based on priority. There are a few similar Apps available, however, most of them are overly complicated for users. These Apps also function more like professional work calendars rather than "To-Do-List Apps" that assist users to reach goals and monitor their progress. Moreover, PlanCatcher provides a more user-friendly interface leading to increased user interaction and engagement. Specifically, each page of the App is designed to be clear and simple allowing users to view their tasks and plan in a user-friendly layout. Through the theme selection setting of the application, users can select a color theme to customize the App to better fit their preferences. The purpose of this application is to help users to increase their daily productivity and to complete their daily tasks in a manageable and organized fashion, as well as to focus their attention on tasks of high importance. In January 2018, the PlanCatcher App was published in the Apple App Store with an aim to help people increase productivity and better manage their goals and deadlines.

Retinal Disease Detection Using Machine Learning

Sukhjit Singh, Computer Information Systems
Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

The focus of the research was to develop a machine learning model which can be used to diagnose retinal eye diseases such as cataracts, glaucoma, and diabetic retinopathy. These retinal diseases account for more than 75% of world blindness and can be easily treated if detected early. Most cases which result in blindness are in areas of the world that are under-developed and do not have access to eye exams. Internet connectivity is exploding in under developing countries and cheap internet enabled phones are widely available. The development of the neural network was done in Python and supporting Python libraries of TensorFlow, Keras, scikitlearn, and NumPy. For data a large dataset was downloaded from Kaggle.com for diabetic retinopathy, glaucoma images were retrieved from fau.de, and images for cataracts were taken from various internet images and cropped. The network was trained using this data and returned above 85% correct diagnosis. When selecting images outside of the training dataset diabetic retinopathy tested the best because the amount of data was much larger for those images. The web

interface was then created using FloyHub and was easy to use on a PC but became much more difficult on a mobile phone were it did not scale very well. The results however did show that creating an effective web tool for retinal disease detection was very much possible. For my presentation I will be creating a poster and bringing a laptop and camera which will allow attendees to interact with the web interface by uploading pictures of their own eyes or using sample images.

SAE Mini Baja

Kevin Carr, Bradley Ziolkowski, Robert Nappo, James Larcara and **Bryan Doheny,** ENT 422: Machine Design II
Faculty Mentor: Professor David Kukulka, Engineering Technology

Over the past 40 years, SAE Baja has furthered automotive boundaries in the world of off-road racing, design, analysis, and construction than ever before. The SAE Mini Baja competition is an international motorsports competition sponsored by the Society of Automotive Engineers (SAE). Each year, 100 schools from around the world compete in a four-day, rigorous competition. The competition consists of four main events including acceleration, hill climb, maneuverability, and suspension. It also consists of a sales and design presentation. Members of the Buffalo State Baja Team are responsible for contacting companies for potential sponsorships, whether they be in the form of funding, materials or machining. Buffalo State MET students began designing and seeking sponsors for their car in the beginning of the Fall semester. The competition that our team is participating in is being held in June in Rochester, New York. Our team of nine senior students, with the assistance of several underclassmen have been working diligently to produce the most economically efficient car. Students must design each component of the car except for the engine. Each team member is responsible for the design and fabrication of a section of the car. Team members meet two to three times a week and collaborate with others to complete their section. Our main goal for this year's car was to decrease the total weight from last year's car. This was accomplished by using carbon fiber panels, thinner wall thickness tubing, and limiting material use.

Stacking Blocks: Modular Oil Lubrication System

Elvis Lumnica, Michael Garete and **Ryan Dietz,** ENT 422: Machine Design II
Faculty Mentor: Professor David Kukulka, Engineering Technology

FS-Elliott is a global leader in the engineering and manufacturing of oil-free, centrifugal compressors with operations in over 90 countries. These air compressors require oil lubrication for critical components such as the impellers, couplings, shafts and gears. The task at hand is to design a modular oil lubrication system for FS-Elliot's line of P300+ air compressors. Currently the oiling system for their P300+ air compressor unit contains many piping and hose connections, and this leads to high maintenance costs over a long period of time. The main objective of this project is to eliminate as many piping connections and replace them with modular blocks so that the entire lubrication system can be easily serviced. A second objective for the new modular design is to make the field serviceability of this new system as simple as possible to reduce costs for FS-Elliott in their warrantied labor department. Additionally, the design should incorporate a block-like system that encompass the already existing auxiliary oil pump, oil filter, reservoir, and oil cooler into one unit that can easily be attached and detached from the compressor for servicing and/or diagnosis of the compressor. The oil cooler would be submerged within the oil reservoir, which would eliminate many connections and would still maintain proper oil temperature. Eliminating most of the piping connections within the oil lubrication system will improve the efficiency of the system and will make it easier to perform maintenance on the machine. FS-Elliot will benefit from this design by being able to ensure the customer post market insurance and efficiency which will then in turn help promote the compressor to customers.

Structural Supporting Systems

Chelsea Kromer and **Harold Kropp,** ENT 422: Machine Design II
Faculty Mentor: Professor Daivid Kukulka, Engineering Technology

Praxair is located in Tonawanda, New York, that specializes in manufacturing, storing, and transporting industrial gases around the world. Praxair designs plants that produce oxygen, nitrogen, argon, hydrogen and carbon dioxide in a safe and economical manner. Pipes that transport these gases need to be run long distances and are supported on large modules. Praxair doesn't have a standard practice to evaluate pipe structures. Since there are many factors that go into the design of pipe supports, it can be time-consuming to evaluate them all. The objective of this project is to compare different types of pipe support structures and to develop a size and selection software tool. This software tool needs to consider all types of loading on the beams and columns that make up the structures, including ice, wind, seismic, pipes, and liquid loads. Additionally, cost and scheduling details need to be considered during this comparison. Embedded within this software tool are equations from the current codes and standards that are used for calculations. This software tool can be used by Praxair during the proposal phase of plant design to help win future projects.

Testbed for Solar Transactive Energy with Implementation of Battery Management System

Aidan Krombach, Berthony Lozier and **Weng Yu,** ENT 466: Electrical Design II
Faculty Mentor: Professor Ilya Grinberg, Engineering Technology

The current methods involved with renewable energy and its consumption, storage, and distribution are largely flawed. Due to the losses involved with feeding energy back into the grid, and the closed market operation of the Hierarchical Energy system, renewable power sources are not being used in the most effective way. The creation of microgrids combats this problem through keeping energy production within the microgrid and allowing the possible distribution and selling of this power to be controlled by those producing the power. This idea is called Transactive Energy. The goal of this project is the development of a microgrid testbed to emulate the benefits and possible complications of the microgrid system. A main effort within this project is to have a photovoltaic system integrated with both a battery and battery management system into the microgrid. This battery will be able to store any excess power while only allowing a minuscule amount to be feedback into the utility system. This will allow for instant selling of excess power during more desirable times. The solar microgrid will also facilitate transactive energy experiments and provide economic factors into the operation of the microgrid.

Theoretical Efficiency Calculations of Bismuth-based Perovskite Solar Cells

Michael Pham, ENT 499: Solar Simulation and Data Analysis
Faculty Mentor: Professor Saquib Ahmed, Engineering Technology

Perovskite solar cells have recently drawn attention for photovoltaic application with certified efficiently more than 22%. Unfortunately, the toxicity of a Pb-base content in these materials can cause a critical concern for future commercial development. We can develop their greatest capability—together with silicon—in a tandem cell to provide an increasing improvement of solar energy and to be a reliable source compared to common fossil fuels in the market. The key to this research is to replace the toxic material (Pb) with a non-toxic one. In my research, I use Bi as the perovskite active element. I believe it could have flexibility, long-term stability, and cost-effective production for large-scale manufacturing. My research focuses on data mining critical photovoltaic functionality parameters on bismuth (Bi) which include energy band gap, electron affinity, electron and hole carrier mobilities, electron and hole density of states, and permittivity. Using software called GVPDM, I can use it to run the simulation, looking at the comparison (against Pb) and provide a solar performance trend. By highlighting the dynamics and kinetics compared to the traditional toxic Pb, I can find the optimal solution that provides ultimately the highest efficiency of these non-toxic solar cells, which will ultimately build up to tandem cells.

Tin-based Perovskite Solar Cells: Simulation Studies to Critically Assess Limiting Kinetics

Jon Shaffer, Mechanical Engineering Technology
Faculty Mentor: Professor Saquib Ahmed, Engineering Technology

Perovksite solar cells are the most promising structures in the world of photovoltaics during current times. They have tremendous potential—together with silicon, in a tandem stack—to provide the critical breakthrough that the world of solar needs to be commercially viable and actually beat traditional fossil fuels in the market. This research focuses on one of the key limiting factors of perovskites: the inclusion of a toxic material—lead (Pb)—in its structure. In lieu of Pb, I am using tin (Sn) to showcase the full functionality of the cell, and also importantly, probe the limiting kinetics in the device so that I can open up and pursue avenues that makes non-Pb based perovskites a reality. My research focuses on simulation studies whereby I optimize on critical input parameters to give the best efficiency for a Sn-based perovskite cell. Once the parameters are optimized, I am looking at the overall efficiency dynamics, and thereby figuring out limiting criteria that needs fundamental research into materials as well as solar cell stack configurations.

Education

Access to Opportunity for Students Across WNY: Implications for Teaching

Kelly Glowny, Childhood Education
Faculty Mentor: Professor Pixita del Prado Hill, Elementary Education, Literacy, and Educational Leadership

In the United States there is the universal belief that people can do anything they want in life if they work hard enough for it. However, Milner (2010) argues that an opportunity gap exists for children from families with less wealth because of variables outside their control. This study examines the issue of access to opportunity for elementary school students across four settings in WNY. It also looks at how this information influences teaching practices. First, I identified school districts to represent each category. They were Buffalo Public for urban, Cheektowaga Sloan for first ring suburban, Lancaster for suburban, and Lake Shore for rural. Then I used the NYSED School Report Card website to compare demographic and achievement data across the districts. Finally, I identified PDS partners with connections to each school who were asked a set of focus questions. I used the information they provided to conduct an ethnography of each area. I found that Cheektowaga Sloan had the most funding. Lake Shore had the most American Indian students, and Buffalo Public had the largest percentage of language learners and students with disabilities. There were many features that made each community unique. For example, in Buffalo there are programs to support students such as the Buffalo State Community Academic Center. Teachers can serve as advocates for students by being knowledgeable about community programs and activities. When teachers take the time to familiarize themselves with their students' culture there is less cultural conflict and meaningful relationships are made.

The Benefits of Problem-Based Learning

Katilyn Wojcik, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

This project explores the benefits of Problem-Based Learning in elementary classrooms. What are the benefits of PBL for elementary students? How can PBL be used in different subjects? What effects does PBL have on students' critical thinking? This project explores the benefits of PBL. The lessons will explore the positive effects of PBL with elementary students. Through the use of problem-based teaching, teachers can facilitate critical thinking among students. The lessons in this project also utilize collaborative learning. When students are exposed to real world problems, they learn to think critically and in a real-world way. When students can see real effects of their thinking and learning, they can be motivated in a new way. This project shows how teachers can still deliver required curriculum to students using PBL. Students can still acquire necessary knowledge when they are guided through real world problem solving. When students engage in PBL, they foster their critical thinking skills and learn how to apply their knowledge to real world situations. This project is developed with the goal of showing the benefits of using PBL in the elementary classroom. Along with my lessons and results, my literature review showcases the benefits of PBL with proven results by other educators. With the implementation of this style of teaching in multiple subjects, educators will be able to see how simple it can be to transform their teaching to promote critical thinking skills using PBL.

Best Practices in Promoting Language Learning: Chile & the US

Kayla Pyc, EDU 380: IPDS Chile
Faculty Mentor: Professor Raquel Schmidt, Exceptional Education

This research project will explore key differences between language instructional practices in schools in Chile and the United States. The investigator will be traveling to Santiago, Chile to visit several local elementary schools, and will also visit local schools in western New York to collect data. This study will compare and contrast pedagogical differences between the two different countries as they relate to the classroom instruction of English Language Learners (ELLs). Data will be collected using the following methods: direct observation, interviews of teachers and students, and classroom instructional activities. This presentation will provide an overview of this project as well as preliminary results of the study. Specific strategies teachers in the US employ to assist ELLs in the classroom will be summarized. There will also be discussion of future investigator activities while in Chile, with the goal of defining key differences and similarities in classroom instructional practices for ELLs in grades k-6.

Closing the Gap: How Teachers Help Students in Poverty Succeed

Madison Jones, HON 400: All College Honors Colloquium
Faculty Mentors: Professor Dianne McCarthy, Elementary Education, Literacy, and Educational Leadership and Professor Andrea Guiati, Modern and Classical Languages

Around 15 million students in the united states are living in poverty. This number accounts for about 21% of all students. This research looks at the impact of poverty on the academic success of students. The research explored the outcome of poverty on the physical health, as well as the educational outcomes of students. Part of this research looked at specific health complications linked to families in poverty, as well as statistics surrounding academic accomplishment in impoverished areas. Through online research as well as a survey, I explored strategies that will help decrease the impact of poverty on the academic performance of students.

Comparison of Special Education in Zambia vs. the United States

Claire Borczuch, EDU 380: IPDS Study Abroad and Service Learning in Zambia
Faculty Mentor: Professor Angela Patti, Exceptional Education

Within my teacher preparation program, I study the ways in which students with disabilities are served in education systems in the United States. Through my study abroad program, I studied how students with disabilities are served in another country, Zambia. I did this by conducting interviews with teachers in Zambian schools, as well as observing service delivery models while in field placement in Zambian schools. Then, I compared the systems within the two countries. Through this project, I broadened my perspective of how individuals with disabilities are served within education systems. As a future teacher, developing a more global understanding of education will make me better able to understand the contexts in which I work and how to meet the needs of all students.

Creating an Open Question Bank for an Online Chemistry Course

Vincent Agro, HON 400: All College Honors Colloquium
Faculty Mentor: Professor Maria Pacheco, Chemistry

How can one build a test bank, built from the best and most effective open resources, to ensure our students get the best learning experience? This research project will show how to use open resources to develop a question bank for an online chemistry course for non-science majors. An open resource is an educational resource that is freely accessible, openly licensed media, text, or any other digital asset. These resources are then used to assist with teaching, learning, and assessing. The difficulty when teaching an online course is ensuring the students are learning and absorbing the information when they don't have someone in front of them teaching. Places like Chem Libre Text and Khan Academy will help sort these resources and analyze the different kinds of materials. This research will analyze which types of multiple-choice questions spark critical thinking and try to realize how certain questions are better than others. The outcome of this project is to not only have a test question bank made up of entry-level chemistry material, but to be able to have a method and idea for what kind of learning material to use when building these kinds of question banks. In addition, we'll hope to have an idea of what type of questions one should look for, and what multiple-choice questions are the most effective to use when teaching non-science majors chemistry. For the endgame of all teaching is to make sure the student can understand the concepts and absorb the information rather than just being able to regurgitate facts.

Creative Instructional Activities to Promote Classroom Engagement in Myanmar

Rakia Akter, Childhood Education
Faculty Mentor: Professor Pixita del Prado Hill, Elementary Education, Literacy, & Educational Leadership

The first year of the SUNY Buffalo State Myanmar Program traveled to Yangon in summer 2018 under the leadership of the Creative Studies Department. The Myanmar Ministry of Education is seeking to shift instructional practices from a focus on rote learning to engaging higher order thinking in grades 1-12. This project examined the literature on the use of individual white boards to increase student engagement. Next, teachers in the Dha Maw Da Monastery school serving children in grades 1-8 were interviewed to identify the current instructional approaches used. Three examples of white board use were demonstrated in the Myanmar school, and then teachers were interviewed again to determine their interest in using this form of instruction. The teachers showed a lot of interest in using the new tools in their classrooms but expressed their concern about the cost of dry erase markers. After talking to teachers and the principal, a more sustainable alternative was proposed. A set of 100 chalk boards with chalk was donated to the school for continued use after the program ended. I was very fortunate to take this trip so early on in my journey to becoming a certified teacher; it continues to shape how I learn in my classrooms and how I would teach my own students. The experience has humbled me and ignited a deeper passion for teaching.

Cross Integration Social Studies with ELA Instruction in Elementary Classrooms

Joshua Garrison, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

There are two sides in regard to the argument of social studies instruction in today's current elementary classrooms. Some researchers believe that social studies is being taught as frequently as it has been in the past, pre-Common Core and No Child Left Behind implementation, and some researchers believe that social studies has a largely diminished role in comparison to subjects such as math and English language arts. The reasoning behind the decreased time allotted to social studies instruction is imparted largely by pressure on instructors for high state test scores in content areas math and English language arts. With the new landscape of elementary education, alternative styles of instruction must be explored to adequately meet the proper social studies curriculum standards for a complete education. The central idea of this research focuses around social studies cross integration into English language arts. The implementation of social studies into the English language arts curriculum

throughout this study are done in respect to the Common Core standards. This is a way for teachers to maintain their focus on English language arts to prepare students for future assessment, whilst still incorporating social studies, as opposed to omitting it all together due to time constraints. This presentation will concern my findings from this research.

The Efficacy of a College Accessibility Program for Urban Students

Sheilly Aguilar, Gabriela Drake, Jakilah Greene and **Joseph Syracuse,** CWP 102: Argumentation and Research
Faculty Mentors: Professor Susan Mary Paige, New Student Academic Programs and Professor Jane Sullivan, Writing Program

Access to higher education for urban students has been part of national and local education policy discussions. In addition, urban students' access to higher education is limited by many factors, and this is an area of policy discussion on the national, state, and local level in the United States. To address this concern locally, the city of Buffalo, New York has a program called "Say Yes." This program assists urban students of the Buffalo Public School System to have the advantage of attending college. With IRB approval, we will collect demographic data from the program at Buffalo State College, including the number of students, the graduation rates, and the additional supports for students. In addition, we will conduct an interview with the Say Yes Program Coordinator and five program participants.

The English Language Arts Educational Counter-Stories of Buffalo's Black Youth

Ja'Quona Renfro, English Education
Faculty Mentor: Professor Jevon Hunter, School of Education

This research project examined the high school English Language Arts educational experiences of Black youth in Buffalo, New York. The project focused on the curriculum youth experienced, the instruction they received, and the ways in which the curriculum and instruction can be improved. A qualitative research methodology informed by Critical Race Theory was used to conduct the research. The project was orchestrated in three phases. In phase one, I researched, summarized, and created questions from targeted literature that investigated similar themes as I was researching. Phase two consisted of conducting face-to-face interviews with each of my participants, two male and two female, facilitating three interviews per student, for a total of twelve interviews. Lastly, in phase three, I gathered all data collected from my interviewees, plus revisited previously read literature, and examined it all to write up my results. The goal of this research project was to re/frame dominant narratives of Black youth from a deficit to a powerful asset in the classroom, one that privileges urban youth voices and educational experiences. By employing this methodology enlightened by counter-storytelling, it aided me in exploring the inequality and inequity of the education of Buffalo's Black teenagers in ELA high school classrooms. Findings suggested that some African-American students preferred to investigate ELA content that reflected their racial identity, curriculum that explored their native language usage, and literature that accurately represented their circumstances. The results of this investigation illustrated a more nuanced description of African-American youth and their experiences with the educational system.

Expanding Operational Thinking in Kindergarteners

Kyle Earl, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

Nobody can deny that mathematics in education is important and an essential life skill. My target for this project is to help both teachers and parents build their kindergartener's understanding of mathematical operations. This is the understanding that addition is putting together and adding to, while subtraction is taking apart and taking from. This project will consist of an explicitly designed teaching sequence regarding operational thinking in kindergarteners. This Master's Project will dive deep inside New York State Learning Standards for Mathematics and help young kindergarten students understand the operational thinking concepts of addition and subtraction. All lessons will be aligned with New York State Learning Standards for Mathematics in kindergarten and will specifically contain and develop at least one of these standards in each lesson. This Master's Project can become a useful tool in a parent and teachers' life. This Master's Project can become a guide in reinforcing lessons regarding operational thinking both at home or in school. I would recommend using this Master's Project in a sequential order to not confuse or demotivate any student. I would also recommend repeating activities that students struggle with in different ways to help solidify their understanding, while not creating rote memory of facts and operations. Mathematics is an essential life skill that cannot be ignored. This Master's Project is designed for both parents and teachers to help their kindergarteners achieve higher understanding in operational thinking and is directly linked to the New York State Standards for Mathematics.

Explicitly Teaching Reading Comprehension Strategies to Students with Learning Disabilities

Francesca Cutrona, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

Reading skills, specifically reading comprehension, continues to be an area of need for many students. Reading comprehension is the ability to read and understand the meaning of a given text. For students identified with disabilities, specifically learning disabilities, it is exceptionally challenging to improve reading comprehension skills. The question I am posing through this research is: What is the impact of explicitly teaching reading comprehension strategies to students with learning disabilities? Through my research, second grade students will be introduced to numerous reading comprehension approaches, such as explicit instruction, Self-Regulated Strategy Development, Reciprocal Teaching Strategies. Anticipated results of this project include increased reading comprehension through the use of explicit instruction for students identified with learning disabilities. Teachers in special education classrooms would benefit from this research as it permits students to practice specific reading-based strategies within the classroom which leads to increased comprehension skills. In the future, my Graduate Research Project could be turned into an intervention system for students with learning disabilities who need to be taught specific reading comprehension strategies. Teachers would be able to use the research to develop explicit reading comprehension interventions that would be used in a classroom. Within the classroom, students with disabilities are at a disadvantage due to the lack of explicit and direct instruction provided to them. The use of explicit instruction is the most successful way to implement reading comprehension strategies.

Exploring Creativity Learning Skills in the Elementary Mathematics Classroom

Danni Chen, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

This Master's Curriculum Research Project is about teaching the elementary students' mathematics by using creative learning skills. In elementary mathematics classrooms, teachers can offer ways to apply creativity to mathematical problems that will enhance the students' thinking and learning. Creativity is an expansive term with a wide range of implications. Since the application of creativity can greatly impact the students in problem-solving and learning strategies, creative elementary mathematic lecturers must be flexible in allowing their students in the use of space and time. When kids are allowed to work at their own pace, interest and commitment levels increase. According to the literature, there is strong evidence across a number of studies that providing a wide range of appropriate materials, tools, and other resources can stimulate creativity. These studies also mention that educators need to find the appropriate materials. This Master's curriculum research project is aligned with the New York State Next Generation Mathematics Learning Standards and New York State P-12 Common Core Learning Standards for Mathematics. The purpose of this project was to develop a foundation for teaching creativity in elementary mathematics classroom and help the second grader's to solve the mathematical problem in creative ways.

Graphic Organizers as a Tool for Vocabulary Retention

Joshua Guay, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

Students with learning disabilities frequently struggle to retain new vocabulary regardless of the target language. Bridging the gap between the needs of students with learning disabilities and the desired learning outcomes can be as simple as the organization of material. This project will study the effectiveness of graphic organizers as a way for students with learning disabilities to better retain vocabulary, more specifically, vocabulary in Spanish. Students will first be assessed without any intervention to establish a baseline. Graphic organizers for vocabulary will be introduced as an intervention while students continue to be evaluated throughout the intervention. After the intervention period is complete, the intervention will be removed, and data will be collected again. Graphic organizers providing academic support and structure to instruction are helpful to any student with or without a learning disability. Discovering new information about the way that students learn will better help the way that teachers prepare for their learning needs.

Have No Fear: Teacher Candidates Effectively Communicating with Families

Grace Vogel, Childhood Education and Kaylee Gorney, Childhood Education
Faculty Mentors: Professor Julie Henry, Elementary Education, Literacy and Educational Leadership and Professor Corrine Kindzierski, Elementary Education, Literacy and Educational Leadership

The purpose of this project was to examine ways to effectively prepare teacher candidates for communication and collaboration with student families. Many teacher candidates are not given the opportunity to take part in parent–teacher meetings and therefore do not know how to handle these situations when beginning their careers. Establishing a relationship with the parents of students is essential to the child's success. There are crucial conversations that need to be held with the families of a student, and conveying

sensitive information of that kind is not always easy. Due to the lack of experience, many new teachers struggle with this situation. Our goal was to find resources to better prepare teacher candidates for these future conversations. We created a survey for peers in the early childhood and childhood education program to complete, so that we could collect feedback on how effective others found these resources. These new resources will positively influence future teacher candidates' ability to develop and maintain relationships with students' families.

High Crime Affecting Graduation Rates in the Buffalo Public School District

Andrea Khoury, COM 590: Communication Data Analytics
Faculty Mentor: Professor Ann Liao, Communication

Buffalo is known to be a high crime rate city compared to other cities in America. I want to look at the Buffalo crime data from Buffalo open data to see what crimes are being committed and where they are happening. I also want to bring in Buffalo Public school data and try to connect and see what these two sets of data have in common. My main focus of this project is to see if the area with the most crime in Buffalo is related to the graduation rates in high schools. I believe and would like to prove through research that the areas of Buffalo that are considered high crime rate areas have less high school graduates than other schools in the city. Through my research thus far, I have seen that zip codes in the City of Buffalo that have high crime rates have less students graduating from city schools than schools in the suburbs. Using data from Buffalo Open Data website along with data from the Department of Education, I can reach a conclusion about my hypothesis.

How Does Pre-K Impact Children?

Karly Glowny, Early Childhood and Childhood Education
Faculty Mentor: Professor Kate Dust, Elementary Education, Literacy, and Educational Leadership

The goal of my project is to determine how pre-k positively impacts children's skills and abilities, specifically focusing on how children are positively impacted socially, emotionally, and academically in kindergarten. Prior to starting my research, I determined that I wanted to research how kindergarten students who have pre-k experience are doing in school versus kindergarten students who have not attended pre-k. I began the data collection process by performing a literature review online from databases and websites that contained research about the positive effects that pre-k has on children. I found that pre-k is beneficial for children in many ways and gives them the necessary skills they need to be successful in kindergarten. I summarize this data and present the findings. The research shows that pre-k does indeed have a positive effect on kindergarteners socially, emotionally, and academically. Children who attend pre-k show positive outcomes that will help them to be confident and successful in school.

The Impact of Free Play on Academic Success for Preschoolers

Breanna Stone, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

Throughout my research I found there are many definitions for the word "play." The argument being structured is play vs free play. Free play is a chance to socialize with other children and can include many benefits, including improved literacy, attention, self-regulation, and classroom behavior along with social and emotional skills. Free play is sometimes frowned upon because of the lack of structure. The researcher observed preschool children during free play to see what language and academic skills they are using. The researcher was looking at the impact of free play and the skills preschoolers learn during free play. Teachers and administrators will be able to use the results of this project to offer research-based instruction. For those educators who currently have administrators that want teacher-directed centers instead of free play in their curriculum, they will be able to use this research to show why free play is so important. The most important aspect of this research is to demonstrate how educators can help children to be the most successful in their academic and future careers by building foundational skills.

Impact of Parent Involvement on Literacy Development

Ashley Trainor, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

As education continues to grow and advance, many questions appear about the impact of parental involvement on literacy development of students as they are starting formal education. Research has shown that factors such as parent's education, socio-economic status and positive relationships with their child's teacher can help the literacy development of their child continue to grow. The purpose of this project was to find if what parents are doing at home is helping their child's literacy development, and also what parents can do to continue to help their child succeed in the classroom. All in all, there are many factors involving parents that will I turn have an impact on the literacy development of their child. Both positives and negatives were found in this research on how parents can interact with their children to help with formal schooling practices. Parents should realize that what they are doing at home and outside of the home with their children will have an impact on their educational experience; and with that should take every measure seriously so their child can grow in their reading and literacy development.

The Impacts of STREAM Activities on Student Participation

Pamela Gon, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy and Educational Leadership

This Master's Research Project explains implementing and teachings of the STREAM curriculum. Students will become engaged in their learning and an increase in participation will be reached. With this project, information and resources are gathered and carried out for a third-grade curriculum where a nine-week science unit on Ecosystems and Habitats will be developed using the New York State Common Core Standards. Through the formation of a firm knowledge-based foundation on this topic, the students will think like scientists and apply the knowledge learned to develop and complete a STREAM activity. With the use of a STREAM activity, researchers have shown a wide range of student involvement and participation in these such activities. They use and apply multiple content areas to find their niche in something that they are good at as well as create an opportunity to step out of the box; stretching their thinking and skills to a whole new level. Teachers and students will be able to find enjoyment in daily lessons because once background knowledge is developed and understood, the use of a STREAM activity to tie it all together will keep students interested in participating in more learning opportunities. The use of STREAM activities in future content areas and participation will promote teachers to use activities.

Impacts of Technology on Metacognition of Elementary Students

Jessica Zaidel, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

Technology creates a fast-paced, almost instantaneous experience, and crucial time spent self-reflecting is becoming less of a priority to students. Thinking and reflecting on one's own thought process, otherwise known as metacognition, can lead to better learning; knowing what works best for you will help you to succeed. What are the impacts of technology on metacognition of elementary students? With this leading my research, I will seek out and apply technologies that are recommended for self-reflection/metacognition and use these in supplementation with a sequence of lessons, targeting grades 3-5, that require a knowledge of one's abilities. At the summation of this study, I expect both positive and negative impacts on the participants' metacognition, due to the individuals' varied learning styles. I also anticipate the participants will respond well to the use and navigation of the technology as they are children of the technology age. Teachers who attempt to use technology to increase metacognition in their classroom should first familiarize themselves with the technology before integrating it into their classroom and allot time for teaching their students how to properly use the new technology to allow for students to reap the most benefits possible. As we progress further into a technological world, educators must embrace new technology and the ways that it impacts both society and the classroom.

Implementing Cursive Handwriting in a Third Grade Classroom

Valerie Wellenc, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

This project focuses on developing a curriculum used by third grade teachers to teach their students cursive writing. It is our job as educators to find tools and materials to successfully implement cursive writing in the lives of young children. The curriculum developed will center on the use of the Zaner–Bloser cursive handwriting books, a colorful way to learn cursive handwriting, while also taking an analytical approach to teaching the students the fundamentals of cursive writing. Students will be able to use the appropriate process to break down the letters of the English alphabet and learn how to write in cursive. The purpose of my Master's project is to demonstrate the importance of cursive hand writing in all grade levels. While implementing cursive writing in third grade, students have the opportunity to grow and practice reading and writing in cursive for many years to come. The anticipated outcome of my research project is to demonstrate how teachers can implement cursive handwriting in a their classroom, even with minimal time. Teachers will be able to create opportunities for learning to occur and teach cursive handwriting to the future generation. Teachers can teach the cursive alphabet and writing sentences in cursive while also allowing students to become more interested in the topic of handwriting by using the projects that expand the learners mind on the cursive language. By implementing cursive handwriting in the third grade, students are presented with the opportunity to write in both manuscript and/or cursive for their future endeavors!

Knowing vs. Understanding: Exploring Mathematics Education

Austin Wangler, HON 400: All College Honors Colloquium
Faculty Mentor: Professor Nilam Yagielski, Mathematics Education

A good majority of people will experience a primary and secondary education in their life time. With this education comes copious amounts of mathematics classes. So the way that it is taught and learned is clearly important at any level. The way math is taught varies from teacher to teacher. On top of this, standards in math education have changed a lot in the past couple of years. Many students in my own generation and

generations before may agree they've had a very procedural experience of learning mathematics. This may yield good test results, but maybe not the best conceptual understanding of what is going on. I believe there is a difference in knowing something, and understanding something. Though a student may know a certain trick that their teacher taught them, I believe knowing why the trick works is much more valuable. Developing young students to learn and think this way will offer a much better educational future, no matter what field it may be. In my research, I look into different pedagogical methods of math education, and how they can either help or hurt a students understanding of a topic. I also delve into how a concrete conceptual understanding of certain aspects of math can lead to further success in the subject.

La Vida Después de María: An Investigation of the PTSD of Puerto Rican Students Impacted by the Disaster

Astrid Milagros Martinez Perez, Childhood Education
Faculty Mentor: Professor Gliset Colón, Exceptional Education

The Buffalo Public schools (BPS) have received over 800 students from Puerto Rico since last fall. The purpose of this study was to identify the ability of teachers to handle the Post-Traumatic Stress Disorder (PTSD) of Puerto Rican students that have emigrated to Buffalo after the devastating impact of Hurricane Maria. One bilingual high school in the Buffalo Public School District was identified to serve as a "case-study". The qualitative research was conducted by providing teachers who served the recently emigrated students with a survey. This survey was handed out to twelve teachers and provided data regarding the schooling experiences of the students and factors related to their PTSD as identified by the teachers. Additionally, interviews were conducted with three BPS teachers, two BPS employees and two families. The responses to these questions and interviews were analyzed and coded to acquire the final results of the research. Recently, BPS has mandated all teachers participate in trauma-based training. The challenges faced by both the students and teachers along with any gaps in training were identified and will be shared during this presentation. Three research questions were addresses. How prepared are classroom teachers to effectively handle the PTSD or other trauma-related issues demonstrated by the Puerto Rican students that came after hurricane Maria? What techniques are most effective to handle the PTSD or other trauma-related issues demonstrated by the Puerto Rican students that came after hurricane Maria? What are the potential gaps in training needed for classroom teachers to effectively handle PTSD or other trauma-related issues in the classroom?

Learning Science in Elementary School Classrooms of Western New York

Katlin Smith, Childhood Education
Faculty Mentor: Professor Chris Shively, Elementary Education, Literacy, and Educational Leadership

In 2013, Blank found that instructional time teaching science (in terms of hours per week), in elementary classrooms across the United States, declined between 1994 to 2008. According to the National Teacher and Principal Survey (NTPS), the average number of hours elementary school teachers spent teaching science in 2011-2012 was 2.5 hours and in 2015 - 2016 was 2.2 hours. Students in New York State have scored below the national average on the 2009 and 2015 National Assessment of Educational Progress 4th grade science exams and based on Blank's work, NY teachers spent less time teaching science than teachers across the country. The purpose of this research was to develop and distribute a questionnaire that examined if and how science is being taught in elementary classrooms across Western New York. The questionnaire asked teachers: (1) if they taught science, (2) how often, (3) at what time of day, and (4) with what resources? It also asked them about how they were prepared to teach elementary school science. Participants for this exploratory study came from a graduate science course taught by the faculty mentor at Buffalo State College. Results showed that 11 out of the 29 participants taught science. Of those eleven, 2 reported that they teach science bi-weekly, 3 reported that they teach science daily, and 6 reported that they teach science weekly. Only two teachers met the national average of 2.2 hours per week.

Mindfulness + Math = Results

Melissa McGroarty, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

In crowded classrooms bombarded with digital distractions and a wide range of learners, the expectations placed upon teachers and students are increasing. To meet these challenges there is a need for sustained attention, self-control, and the ability to think critically. To accomplish this, students must maintain a presence during instruction, stay connected to the learning activities, and work with peers. These demands can be met by teaching children how to practice mindfulness. This Master's Project will focus on guiding first grade math students through mindful practices to answer the questions: Can practicing mindfulness lead to academic success? Can mindfulness assist students in learning positive ways to respond to opposition during partner and group work? Based upon current research, effective strategies for teaching students the practice of being mindful will be identified and selected. These practices will be woven into mathematical activities to teach the concepts of measurement and data. When this curriculum project is implemented, students

will be more engaged in the learning process, able to concentrate on instruction, complete tasks by critically examining a situation, and communicating their learning. This curriculum can be tailored to fit the needs of every classroom. While this project specifically focuses on the use of mindfulness to support and enhance student learning in the area of mathematics, it is a practice that can be taught to all students and applied to all academic areas. The benefits of practicing mindfulness will be a noticeable increase in self-regulation, working memory, and students taking ownership of learning.

Music in the Classroom: Second Language Instruction in Torremaggiore, Italy

Christine Garas, Exceptional Education
Faculty Mentors: Professor Pixita del Prado Hill, Elementary Education, Literacy, and Educational Leadership and Professor Kerry Renzoni, Music Department

Through my research as part of the IPDS Torremaggiore, Italy program in January 2018, I have learned how beneficial musical and movement-based activities are for students learning a second language. This study explores the use of musical activities in the general classroom to support vocabulary comprehension for English Language Learners (ELLs) in Italy. Prior to travel, several instructional activities were developed to be implemented in classrooms at San Giovanni Bosco Elementary School in Torremaggiore, Italy. These activities were developed from the original children's book I wrote with my partner, who was studying Music Education, entitled Buffalo's Own Winter Wonderland. It was created to support English vocabulary acquisition and build on students' knowledge of Buffalo, New York. Musical activities such as singing, chanting, and movement were co-taught with English instruction. Excerpts from songs were used to specifically support the language of the text, such as, "Walking in a Winter Wonderland". Italian students demonstrated engagement during the instruction through active participation, specifically moving and singing along, and providing verbal responses when prompted. Using data triangulation and qualitative coding to analyze data sources such as peers' blog posts about their experiences of using music to teach English, informal interviews, classroom observation field notes, and personal written reflections, two major recurring themes emerged: (1) pedagogical parallels between scaffolding language comprehension and music comprehension; and (2) music as a universal language and teaching tool. After teaching in Torremaggiore, the findings in this study fully support the use of music as an instructional support for ELLs.

Play-based Strategies in Teaching Mathematics

Xuan Yang, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

Play is crucial to children, especially to the younger students. The child moves forward essentially through play activity. Only in this sense can play be considered a leading activity that determines child development. As a teacher, I like teaching, and I hope my students can enjoy learning. Play-based teaching can stimulate students' interest in learning, promote teamwork, and improve students' problem-solving and communication skills. My research question is, what are the effects of game-based teaching strategies on elementary students' mathematics learning? Participants are elementary school students. Future educators can use my project in their daily teaching to stimulate primary school students' interest in math learning and lay a good foundation for their future math learning. In addition, play-based teaching is not limited to math subjects. Through my research project, educators can learn the importance of play for students and pay attention to the application of play in their teaching, which will make their teaching more effective and attractive.

Recess in Elementary Schools in the United States and Chile

Kelly Glowny, EDU 380: IPDS Chile
Faculty Mentor: Professor Pixita del Prado Hill, Elementary Education, Literacy, and Educational Leadership

Research suggests that recess has positive effects on students cognitively, physically, socially, and emotionally by giving them a break from academic challenges presented by school (Ramstetter, Murray, & Garner, 2010). This project compares the role of recess in elementary schools in Buffalo, New York and Santiago, Chile by examining what cultural factors contribute to differences in recess requirements, how students and teachers are impacted, and what these differences look like in schools locally in Buffalo, New York and internationally in Santiago, Chile. First, I will recruit 1-2 classroom teachers locally with ties to the Buffalo State PDS Consortium who will allow me to conduct research in their classrooms. In June 2019 I will be traveling to Santiago, Chile where I will recruit 1-2 classroom teachers affiliated with Universidad Mayor in Santiago. Data will be collected using classroom observations, surveys, and interviews. I anticipate that I will see very minimal to no recess or free time in local elementary schools based on prior experiences in my teacher preparation program. In Chile I anticipate that I will see multiple times when children and teachers engage in free time throughout the school day based on what I have learned through my interactions with visitors from our partner university in Chile, Universidad Mayor. I predict students in Chile will be able to pay attention in class and

thus retain information more than students in the US because they have more time to decompress and shift focus off curriculum to spend time developing social skills.

Rethinking Formative Assessments for Math Class

Carmen Terrell, EDU 380: IPDS Chile
Faculty Mentor: Professor Pixita del Prado Hill, Elementary Education, Literacy, and Educational Leadership

I plan to explore formative assessment practices in secondary mathematics classes. My research will examine how teachers compose formative questions for students and how they use student responses to improve the learning of students and the instruction of the teacher. Formative assessments are very important when teaching our students, especially in a mathematics content course. Not only do formative assessments provide data to see if the students understood the concept that was taught prior to a test, but they also provide the teacher with feedback of the teaching methods used (Fisher and Frey, 2016). For this project, I will begin by reviewing three texts that will provide important information of the various ways to formatively assess students, create rich questions that will cause students to use critical thinking as they problem solve, and include evidence that shows these techniques are successful in mathematics content courses. Next, I will data from a local classroom using an observation protocol. Then I will interview or survey the classroom teacher, teacher candidates, and teacher education faculty associated with the school where I conduct the observations. When I travel to Chile in June, I will gather data in a similar way for a school in Santiago. Because of timing, I will present the literature review and local findings in a poster format at SRCC. Later, I will update my poster to include the findings from Chile and comparisons between the two research sites so I can present this work at the PDS Conference in September.

Services for Students Who are Nonnative Language Learners

Abigail Booth, EDU 580: IPDS Chile
Faculty Mentor: Professor Raquel Schmidt, Exceptional Education

School districts across the United States are experiencing an all-time high in the enrollment of English language learners (ELLs). Many educators are asking what they can do to meet those students' needs. There are many research-based classroom strategies that schools are currently exploring to best fit the needs of these learners. One of these strategies is to require teachers to obtain a teaching endorsement in English to Speakers of Other Languages (TESOL), another requires teachers to complete trainings in instructing ELL students, and other approaches are based on an instructional coaching model that assigns a group of teachers to provide districtwide support for effective ELL instruction. The challenges of effectively instructing nonnative language learners is not only a struggle in the U.S, but also many other countries, including Chile. In this research project, observation and interview surveys with teachers and teacher candidates will be conducted in both Buffalo, New York and Santiago, Chile to answer the following two research questions. One of these questions is what factors contribute to promoting the literacy of non-native language learners in both Santiago and Buffalo and the other is what are key similarities and differences between the two countries when it comes to educating nonnative learners?

Special Education in the Dominican Republic

Kaeley Biondo, EXE 364: Educating Students with Severe Disabilities
Faculty Mentor: Professor Lynne Sommerstein, Exceptional Education

While in the Dominican Republic, I conducted research on the environments in which individuals with disabilities learn. In the United States, there is a continuum of special education services required by law. Steven Taylor's "Caught in the Continuum" (1988, 2004) argues that once an individual with a disability is placed in a more restrictive environment, the individual often stays in that environment and does not move into a less restrictive setting. I wanted to see if this same continuum and faults existed in the Dominican Republic. I wanted to discover where students with disabilities are educated and if they have opportunities to learn with their typically developing peers. My anticipated outcome was that there were not the supports and services in the Dominican Republic as in the US. I found that most schools in the Dominican Republic barely have enough teachers, funding, materials, and space to teach children in general education. Class sizes in private schools are between 30-40 students, and public schools are closer to 60. The main focus I observed in schools in Cabarete were to keep students in school past primary school, especially girls. Through observation and interviews, I discovered that students with significant disabilities are not learning in schools at all. Students with disabilities were kept home all day with their families. The only formal education for students with significant disabilities is the School for Autism in Santo Domingo in which there are no opportunities for interactions with typically developing peers. I discovered that there is no continuum of services in the Dominican Republic.

The Status of Teachers in Society

Krista Van Wagner, EDU 380: IPDS Chile
Faculty Mentor: Professor Pixita del Prado Hill, Elementary Education, Literacy, and Educational Leadership

I have chosen to research the status of teachers in the United States and Chile through the International Professional Development Schools (IPDS) Chile class (EDU 380) that I am taking this spring at Buffalo State. The goals for my research are to identify the factors affecting the status of teachers and their profession among practicing teachers, teacher candidates, and teacher education faculty in the US and Chile. I hope to learn about the possible similarities and differences of status between teachers in the US and Chile and perhaps identify ideas that increase the status of teachers. My personal goals are to establish guidelines for myself to ensure as a Culinary instructor I exhibit professionalism in my field to shed a positive light with opportunities in the culinary field. I will conduct the first parts of the research project during the spring semester. These parts will include the literature review and gathering data from a school in Buffalo, New York through the use of observation protocols and interviews. I would like to report the preliminary findings at the Student Research and Creativity Conference in a poster presentation. When I travel to Chile during the first three weeks in June, I will collect data from a school in Santiago. When I return, I will analyze the data and report my updated findings at the PDS Conference in September.

Teacher and Students Relationships in the USA and Chile

Karly Glowny, EDU 380: IPDS Chile
Faculty Mentor: Professor Pixita del Prado Hill, Elementary Education, Literacy, and Educational Leadership

The research project will compare and contrast the teacher and student relationships in Chile and the United States. Due to the USA's relatively small class sizes, I hypothesize that teachers are more likely to build relationships with their students and create a warm and inviting classroom to adapt to each student's needs. The goal is that the teacher works to make the classroom environment comfortable for each student. The teacher is validating the student's life, culture, and experience, and school becomes a place in which the student's life and learning can coexist (Hoffman, 2018). The methods used in the research project will be a literature review, data collection for a local school site in Western New York, and data collection in a school in Santiago during my time studying abroad in Chile. The project will take note of the formal and informal interactions that take place between the teacher and the students. As I observe, I will use the findings to develop probing questions for the interview that will follow. The poster presentation will provide a literature, data findings, and implications that will compare and contrast the relationship between students and teachers in both countries.

Teaching Controversial Historical Topics in the United States and Europe

Raymond Ignasiak, BUS 389: Rijeka Bound Community Service
Faculty Mentor: Professor Christine Lai, Business

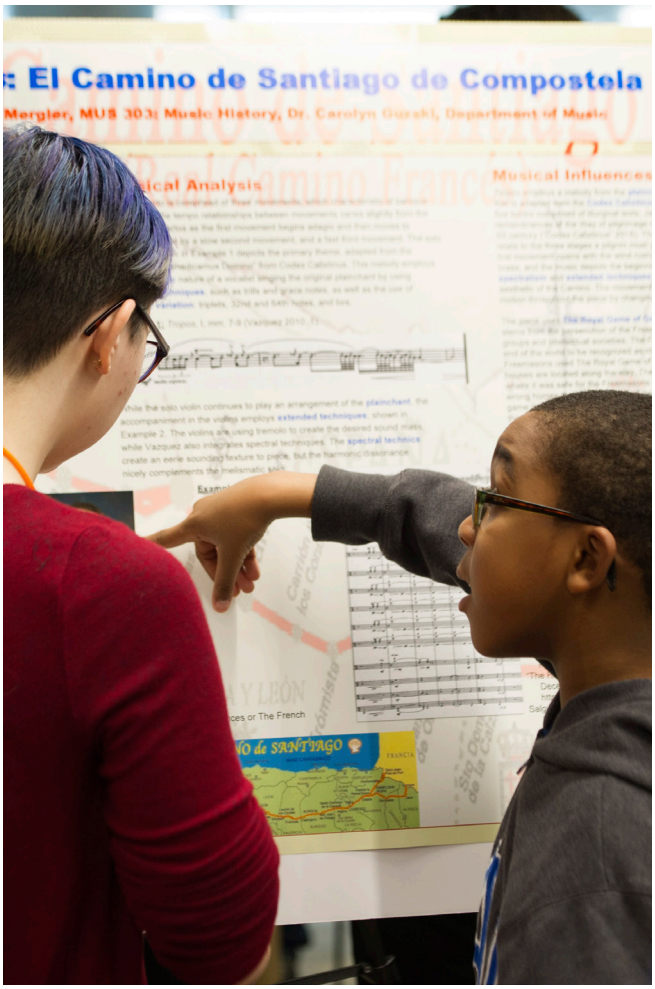
The purpose of this study is to examine how curriculum and educators incorporate controversial topics within the classroom and how it affects student opinion on the content. I will include 1) how educator bias influences teaching; 2) government policies in regard to education reform; 3) and the impact that personal opinions/prior knowledge students present while discussing these issues. Ultimately, I would like to discover to what degree of neutrality that certain topics are presented and whether students in Europe feel like they have a comprehensive grasp on their education. I will conduct a survey with not only EU students but with American students to compare responses. The end-goal of this study will be to find a common ground amongst American and European students while at the same time, define and explain the differences in how contested histories and controversial topics are taught in an educational setting.

Using Whole Language Strategies to Improve ELL Comprehension

Janene Ennis, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

This Master's Curriculum Project is an attempt to address a growing problem in our education system: How can we best educate our English Language Learners (ELLs)? On average, it takes five to seven years to be considered fluent in a language. However, in our current system, ELLs are expected to be immersed in English and be successful. Many programs currently use phonics-based instruction to teach ELLs how to read. This, however, does not typically translate to aid in comprehension, which is required to be successful in higher education and the work force. Whole language instruction, however, may be applicable to both decoding and comprehension when students are first learning English. The research question addressed is: Does using the whole language approach create larger gains in comprehension for beginning ELLs than phonics-based instruction? When implemented, this curriculum would allow students to gain a more holistic understanding and use of English text. Teachers of ELLs will be able to veer away from the instinctual teaching of phonics to read, toward whole language to comprehend. Administrators can consider this curriculum as well when advising their teachers on best practice working with ELLs. The idea of using phonics-based instruction was very successful for teaching many children how to read. However, this does not always teach children what they are reading. Through whole language instruction, students learn new vocabulary in meaningful context, which allows them to comprehend what they

are reading. My curriculum seeks to allow children more success in comprehending text.



Vocabulary Development for ELLs in Fifth-Grade

Marilyn Wang, EDU 690: Master's Project
Faculty Mentor: Professor Coralee Smith, Elementary Education, Literacy, and Educational Leadership

There has been a significant increase in English Language Learners (ELLs) in classrooms over the years. ELLs are an inherently diverse group of students with respect to not only English proficiency, but also various combinations of native languages, prior educational experiences, and the typical host of individual differences common to all students in general. However, many teachers have not received adequate training for teaching this population of students who have little to no knowledge of English when they step into a school setting in the United States. Schools have been struggling to meet their unique language and literacy needs. Because vocabulary development is the basis of learning to read, write, and speak in every content area, it is essential that teachers in every grade level provide meaningful vocabulary instruction. The researcher has done a literature review and has found that vocabulary instruction is beneficial for both monolingual native English speakers as well as ELLs. However, the amount of support given to each student differs. Some ELLs may come into the classroom speaking fluently in social English but struggle with academic English. There are others who will need help with basic English. For my master's project, I created a curriculum map along with lessons that will support all learners with a focus on ELLs.

Health and Social Work

Adoption Policies in Trinidad and Tobago

Alexis Aughtmon, SWK 499: International Social Work with Children
Faculty Mentors: Professor Jessica Fitzpatrick, Social Work and Professor Kimberly Zittel-Palamara, Social Work

The purpose of this study is to explore the social and cultural norms of adoption and adoption policies in Trinidad. Not much is known about the adoption process in this country. The Children's Authority of Trinidad and Tobago are tasked with overseeing the adoption process in the country. Snowball sampling was used to connect with individuals that are involved in the adoption system. Five interviews were completed. Each interview lasted approximately 30 minutes. Pre-set interview questions about the adoption process guided the interviews.I found that child abuse is prevalent in the Trinidad culture. Socioeconomic status has a tremendous impact on the family unit and child abuse occurrence. Lacking the ability to provide the medical and/or educational needs for a child constitutes neglect and can lead to the removal of a child. Interviewees responses supported the process for reporting child abuse indicated by the Children's Authority.The four individuals with occupations presently dealing with children felt they were properly educated and could adequately handle the situations they face. The former administrator (5th interviewee) felt that there was a significant lack of training and education around the welfare of a child. I concluded that abuse, which is highly correlated to socioeconomic status, is the main reason a child is removed from their home and the main goal is reintegration with the family the child was taken from, not adoption. My poster presentation will describe this project and the information I gained from my interviews and my time spent in Trinidad.

Body Composition Amongst Division III Female Athletes

Benaleo Daniels, HEW 295: Exercise Science Applications
Faculty Mentor: Professor Leah Panek-Shirley, Health, Nutrition, and Dietetics

Body composition and physical fitness are important in athletic performance. Division III college athletes tend to have fewer resources for maintaining the best possible body composition and fitness for competition. There is limited available research describing body composition and physical fitness for Division III schools to use as a comparison. This research aims to describe and compare body composition in Division III female athletes participating in different sports. Body composition was assessed using bioelectric impedance, body mass index, and waist-hip ratio. Muscular strength, muscular power, and muscular endurance were also assessed. Both sport teams have close to the same percentage of body fat, 22.8%, and muscle mass, 108.7 lbs., with no significant difference between groups. This research increases the currently available limited data on body composition and fitness among Division III female athletes.

Chelation Therapy: Conventional, Alternative, Controversial

Kristin Siano, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

From the Latin chela—"claw" of a lobster or crab—chelation is the formation of bonds between a polydentate ligand and a transition metal ion, such as mercury or cadmium, or a post-transition metal such as lead, to form a complex. Because of this property, chelating agents such as ethylenediaminetetraactetic acid (EDTA), a hexadentate ligand, have been used since the late 1940s to treat factory workers with lead, mercury, or cadmium poisoning. This treatment involves intravenous administration of the chelating agent, which binds heavy metals in the blood, rendering them biochemically inert and able to be excreted from the body. Today, EDTA continues to be administered in conventional medicine in the United States to treat severe cases of lead poisoning. In alternative medicine, chelation therapy is touted by some practitioners as a cure for a host of disparate disease states, including atherosclerosis and autism spectrum disorders (ASD). These uses for the therapy are surrounded by controversy. The purpose of this research poster, through literature review, is to further discuss the indications for chelation therapy in both conventional and alternative medicine, to identify the chelating agents used for therapy, and to review the safety and efficacy of these treatments.

Child Language Development Norms: Developmental Milestones and Parental Concerns

Mackenzie Mahony, HON 400: All College Honors Colloquium
Faculty Mentors: Professor Susan Felsenfeld, Speech-Language Pathology and Professor Michael Johnson, Modern and Classical Languages

Parents of toddlers and preschoolers may have concerns about whether their child is developing speech and language that is appropriate and age-typical. However, these parents may not know how to proceed to get advice about whether professional services may be needed. The purpose of the present study is to identify how parents report they would find services if they were to be concerned about their child's speech and language development. We plan to ask parents whose preschool-aged child

attends a daycare center in Depew New York to identify three mechanisms they would use to help them determine if a speech or language evaluation should be completed. These responses will be examined to identify the resources that parents report they would use to get help for their child. We will examine whether these reports differ between parents who do and do not express concern about their actual child's speech development.

Chinese Dietary Guidelines in China vs. My Plate and Dietary Guidelines for Americans: An Analysis

Erika Gaye, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Y. Oh, Health, Nutrition, and Dietetics

Nutrition and exercise play a vital role for all individuals around the world. Chronic diseases such as Cardiovascular Disease and Diabetes Mellitus have continued to rise on a global scale. Obesity continues to surge and is becoming prevalent in numerous communities. These ailments can affect our longevity and quality of life. The cost of healthcare is substantial for many individuals. Hospital procedures, prescription drugs, and general practice bills in certain areas of the world hold a heavy price for patients to figure out how to afford. Many chronic illnesses can be positively altered with the modification to lifestyle choices such as nutrition and exercise. With the adaption to a healthier lifestyle many individuals have the potential to reduce their expenses towards healthcare. Our society is diverse with a variety of customs and practices. A collaboration of different societies research, cultures and traditions could be beneficial for the health and longevity of all nations. An analysis of China's Dietary Guidelines for Chinese Residents and the United States Dietary Guidelines will be presented. Both guidelines attempt to reduce the prevalence of chronic disease through optimal nutritional status but present varying cultural viewpoints on food choices and preferences.

Communication Skills Intervention at a Pre-School in Point Fortin, Trinidad

Amanda Schultz, SWK 499: International Social Work with Children
Faculty Mentors: Professor Dr. Kimberly Zittel-Barr, Social Work, Professor Dr. Jessica Fitzpatrick, Social Work and Dr. M. Dian Chin-Kit Wells, DSS

The purpose of the research in Trinidad and Tobago was to teach communication skills to the teachers of the Naomi Chin Kit Memorial School in Point Fortin, Trinidad, to help them in difficult situations. Prior to intervention, teachers were administered pretests, which examined communication training and skills. The intervention consisted of a handout on listening and action skills (i.e., reflection, summarizing, clarification, etc.), practiced a role-play scenario and lasted approximately one hour. The teachers were administered posttests six days following the intervention. The data collected from the pre- and posttests were entered into the SPSS Statistical Program. The data was then analyzed utilizing frequencies and paired t-tests. The intervention appears to have had a slight impact on the teachers in the study; however, only one skill showed statistical significance. Future research in this area with a larger sample size would improve a deeper understanding of the impact of the intervention and could elucidate the statistical significance of the findings.

Delaying Decline of Cognitive Function Relating to Dementia in Older Adults

Jenna Mejia, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Omega 3 fatty acids are polyunsaturated fatty acids that mainly occur in fish oils They have three or up to 6 double bonds in specific positions in the hydrocarbon chain. There have been studies that suggest positive correlation between omega-3 fatty acids and cognitive disorders in adults. Of the numerous trials one has found a beneficial association with those carrying the ApoE 2 allele. Additionally, DHA plays an important role in brain function and is crucial to brain development. As humans age they experience a decrease in DHA level and it's function. The objective of this study is to show the potential of the omega 3's to slow down deterioration of the cognitive function. A study that provided fish oil over 18 months showed slower decline of cognitive function in the control group. This study consisted of 391 participants from age 65 to 90 years old. It took place over an 18 month period and was a double blind study. Participants received a fish oil dosed at 1720 mg of docosahexaenoic acid and 600 mg of eicosapentaenoic acid. The placebo group received the equivalent amount of olive oil in their capsules. When given a fish oil supplement it was evident that there was reduction in decline of cognitive function. It may be concluded that there certainly is a correlation between cognitive function and quality of life in old age.

Dietary Supplements to Treat Osteoarthritic Joint Pain

Elizabeth Crowder, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Osteoarthritis (OA) is a degenerative joint disease caused by insufficient regeneration of cartilage in joints, most often in the knees and hips. Dietary supplements like glucosamine/chondroitin (GC) and MSM have been widely used to improve osteoarthritis associated joint pain. I conducted literature review on the subject to investigate the safety and efficacy of these

supplements on osteoarthritis. Overall, the research that these supplements have shown effectiveness in reducing joint pain in some patients who report having moderate joint pain, as well as having potential to slow the rate of joint/cartilage degradation. As a student in dietetics program, I am intrigued to examine how integrating healthy eating, proper supplementation and active life style influence prevention and treatment/management of osteoarthritis. A few of the current conventional therapies for joint pain include localized corticosteroid injections and daily anti-inflammatory/pain relievers. However, these treatments do have potentially negative consequences such as gastric distress, gastric epithelium irritation and lowering immunity. These are just a few of the reasons why more people are turning to dietary supplements like GC and MSM. Viewers of the present poster may expect to view the statistics on the prevalence and etiology of osteoarthritis and research findings of the effectiveness of GC and MSM on osteoarthritis.

The Effects of Step-Ahead Mentorship on Speech-Language Pathology on Mentor Engagement

Carly Hynd, HON 400: All College Honors Colloquium
Faculty Mentor: Professor Camilo Maldonado, Speech-Language Pathology

This study explores the effects of step-ahead mentoring on student engagement within an undergraduate speech-language pathology program. "Step-ahead" refers to the relatively close-in-age, but not age-equivalent, status of the participants in the study. Mentors were established as those students who were an academic year ahead of their proteges. A review of the literature suggests that a paucity of research investigating mentorship programs at the undergraduate level in this field exists, and is thus greatly needed. My hypothesis is that a mentorship program will increase student engagement within academic study and social interactions within the broader field. Engagement can be defined as meaningful student involvement within the learning environment and with one's peers and instructors, leading to an increased sense of connection to one's major and/or potential career. Seven pairs of research participants (seven juniors and seven seniors) were recruited from SUNY Buffalo State's chapter of the National Student Speech-Language-Hearing Association. After twelve weeks of semi-structured mentorship experiences, interviews were conducted. Results indicated the varied ways student dyads created time and virtual spaces to commune with the explicit purpose of increasing their academic performance and social involvement within their academic program and professional field. A poster will be presented at the SRCC displaying the findings of this study, as well as the implication of having a mentorship program in this major on campus in the future.

Enhancement of Cognitive Function While Consuming DHA in Young Adults

Jazmyne Passmore, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Docosahexaenoic acid (DHA) is an omega-3 fatty acid. Previous studies showed that DHA is important for brain's memory function and that its status is dependent on diet. This research was conducted to find if consumption of DHA from diet or supplementation can increase cognitive function throughout a person's entire life, not just during infant stages and early developmental stages of life. Intervention with DHA is just as important to adults as it is in children. Low consumption of DHA is said to put an individual at risk for low cognitive function. The brain's memory cells are located in the frontal lobe. This part of the brain helps with problem solving, memory, planning, organizing, and impulse control, it also plays a huge part in speech and language development. With the addition of DHA to either a person's diet mainly by eating seafood or through supplementation, they will have evidence of improvements in their cognitive function. This study proved that when healthy adults aged between 18-49 years old, when given a high dose DHA supplement are likely to improve their memory function within 6 months. Foods and supplements that help enhance memory function will be discussed on the poster.

Finding Consensus on E-cigarettes: Analysis of US Medical Societies' Recommendations

Victoria Spikes, Jessica Kulak, Denise Lillvis and **Kenneth Warner,** HEW 295
Faculty Mentor: Professor Jessica Kulak, Health, Nutrition & Dietetics

Medical societies play an important role in publishing valuable position and policy statements. These important statements offer guidance to doctors on how to address the issue of tobacco use with their patients and provide awareness about potential risks and benefits to doctors and policy makers. The goal of this study is to examine these statements on the topic of electronic cigarettes (e-cigarettes). During our study and with the help of a medical librarian, we used information provided by the Association of American Medical Colleges' list of medical specialties and created a table with the medical societies found. By using key word searches we were able to conduct a valid analysis to find policies that mentioned electronic cigarettes and their health effects. We found 44 US medical societies, and only nine had statements that mentioned e-cigarette use. Eight displayed dates from the years of 2014 to 2018. Eight of the nine described problems with e-cigarette use, including the debate

and lack of evidence on e-cigarettes as a harm reduction tool. All nine suggested the FDA regulate use or gave suggestions on how to ban usage overall. In conclusion, some medical societies addressed the issue of the rising e-cigarette epidemic. Other medical societies may not address e-cigarettes because of lack of evidence to get the discussion started. Medical societies can play a role in raising awareness and getting the correct information out to patients in order to prevent nicotine use and improve health.

Functional Foods for Optimal Athletic Performance

Kelly Lindner, NFS 330: Integrative and Funtional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Functional foods are defined as food and food components with specific health benefits beyond nutrition. Functional foods provide more than just nutrients, they may play a role in reducing your risk of disease or they may help make healthful improvements. They include health promoting ingredients or natural components found in conventional, fortified, enriched or enhanced foods. My research method is based on literature search and review on functional foods. Research has found functional foods to be beneficial for many life processes and especially when it comes to peak athletic performance. Athletes are looking for ways to perform at their best ability and functional foods of natural and wholesome options may improve athletic performance. Some ways in which performance can be impacted by certain dietary components include but are not limited to injury prevention, muscle strength increases, and endurance improvements. Depending on the sport or event, athletes may find functional foods that can provide the important benefits. There are currently many commercial nutritional supplements that claim performance enhancement; however, many of them may not be backed by science. Further, some of these performance enhancement supplements may be illegal. I will discuss some of the functional foods and nutritional supplements and their benefits for athletic performance, and the legal and ethical issues of using unproven substances on my poster.

Heart Smart for Life: A Community Wellness Program

Brandon Shaffer, HON 400: All College Honors Colloquium
Faculty Mentor: Ann Marie Smokowski, Mercy Comprehensive Care Center/Mercy OB/GYN

Heart Smart for Life is a community wellness program that educates and provides resources for local Buffalo, NY citizens, and is grant-funded by AstraZeneca HealthCare Foundation. This study explored the effects of an interdisciplinary community education program (the Heart Smart for Life program) on risk factors for cardiovascular disease (BMI/weight, lipid profiles, blood pressure, and patient stated knowledge on health-related subjects). Participant demographics include older age, low socioeconomic status, and living in an area considered a "food desert". These participants face additional barriers to change, including transportation, financial constraints, and varying cognitive ability. Participants were required to complete a pre- and post-survey, obtain fasting pre- and post-lipid profiles, and attend at least two Heart Smart classes per month. Heart Smart classes were presented by a Registered Dietitian, Social Worker, and other healthcare professionals. They covered topics such as Nutrition, cardiovascular disease risk factors and prevention, and chair exercises. Participants that completed these requirements were eligible to receive incentives (Tops gift cards) at the end of the three-month period. Findings to date indicate that patient stated knowledge is improving, but time is necessary for participants to implement healthy changes into their lifestyle, which demonstrates why those participants who have been enrolled for greater than 3 months have decreased weights and BMIs. Further studies and community programs would not only pinpoint the most effective methods to prevent cardiovascular disease but would continue to benefit the health of the community as well.

Learning through Playing: Examining the Education System of Trinidad and Tobago

Vauhn-Dane Murray, SWK 499: International Social Work with Children
Faculty Mentors: Professor Jessica Fitzpatrick, Social Work and Professor Kimberly Zittel-Palamara, Social Work

The purpose of this research is to examine the impact of the economy on the education system of Trinidad and Tobago. Research shows that students who are in a single-headed household are likely to receive inadequate education. Students from low income neighborhoods tend to have lower test scores. Studies shows that in some parts from the country teachers only possess a high school education, which impacts their teaching ability. The method used to conduct the research was interviews of members of the educational system (teachers and principal) at the Naomi Chin Kit (NCK) Memorial School. Additionally, observations of the everyday interactions amongst the parents, kids, and teachers occurred over 4 days. Due to environmental factors and Trinidad and Tobago's economy, some students fall short in terms of receiving adequate access to education. I found that the country's main source of income comes from the oil industry, which in turn hurts other professions—including teachers. Teachers indicated that their low salaries and economic situation prevents them from obtaining additional education and training themselves. The educational level of the teachers at NCK School ranged from high school completion to master's

degree. Students' education appeared to also be impacted by their families' economic status. Many parents struggled to pay the school fees. Many students came from single-headed households. Parents lack respect for education, including teachers and the principal. The poster presentation will describe the project, its significance, findings, and conclusion of the study.

Management of Alzheimer's Disease: Food Edition

Courtney Cole, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Alzheimer's disease is an irreversible, progressive brain disorder that results in memory loss and loss of other cognitive abilities. Although the most known risk factors that contribute to the disease are increasing age, genetic factors, and family history that can't be changed, emerging evidence suggests there may be other factors such as lifestyle and environment. Symptoms of the disease are gradual and eventually become serious enough to interfere with one's ability to perform daily activities. The majority of those with Alzheimer's disease start having symptoms in their mid-60s and are diagnosed with late-onset Alzheimer's. As of 2016, Alzheimer's is the sixth leading cause of death in the United States. Currently, there is no cure or enough evidence to support or confirm any modifiable risk factors such as foods to prevent or delay its onset. The aim of this review is to evaluate the evidence to determine if any foods, food components and change in lifestyle can delay or manage Alzheimer's Disease. The Alzheimer's Association suggests those who want to delay or manage the disease to focus on heart-healthy diets due to increasing evidence that there's an association between obesity, diabetes, and hypertension with Alzheimer's Disease. Increasing studies show that foods such as fruits and vegetables that are antioxidant rich and foods that contain omega-3s can help protect the brain from plaque buildup and cognitive decline. The influence of antioxidants, omega-3s and life style and environment on brain health and incidence of Alzheimer's Disease will be further discussed.

Modern Technology: Increasing Knowledge of Orphan Diseases

Robin Powers, Individualized Studies
Faculty Mentors: Professor Catherine Ansuini, Individualized Studies and Professor Roswell Park, Individualized Studies

An orphan disease is one posing high-risk to a small percentage of the population and whose rarity results in the inability to gain the support and resources required to discover treatments; Ehlers-Danlos Syndrome or EDS is one such example. Individuals with orphan diseases require connections to resources, emotional support, to establish and network within their population, and as a modality to advance research and bring awareness to the community at large. Coupling patient-centered methodologies with modern social messaging technology has generated superior participation rates (averaging 55-96+% response rates) from patients diagnosed with EDS. Short answer questions such as, "What do you think is the most lacking in understanding of patient care in those with EDS?", are favored as they enabled respondents to clearly voice observations, frustrations, and regardless of circumstance, to fully engage and be heard. Social media accessibility and functionality have provided a platform for robust advocacy, interactive exchange, heightened knowledge, and awareness of the plight of those suffering from an orphan disease.

Nutraceuticals: The Alternative to Big Pharma

Lorena Modrzynski, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Nutraceuticals is an emerging field of study that seeks to prevent and/or treat chronic diseases such as diabetes, cardiovascular disease and Alzheimer's disease. The term "nutraceuticals" refers to a food or a component of food that has medicinal/health benefits. A literature review was conducted to find trends in the use of functional foods and nutraceuticals and their benefits in disease prevention. By using food or an isolated compound of food, the nutraceutical industry explores the concept of utilizing nutrients to combat disease. In the diabetic community for example, soy products, omega-3 fatty acids, cinnamon and psyllium fiber are all examples of nutraceutical products that are suggested to aid in T2DM. In heart disease, flavonoids play a large role in the treatment of CVD as well as other foods. Nutraceuticals that impact Alzheimer's Disease include antioxidants such as curcumin, lutein and lycopene as they combat oxidative stress. In today's market, the most popular nutraceutical products include ginseng, echinacea, green tea, omega-3 fatty acids, and folic acid. This begs the question: why would someone choose pharmaceuticals over nutraceuticals? The nutraceutical industry might argue that their products are safe and naturally derived while the pharmaceutical industry contends that they are not only effective, but government regulated as well. Both industries treat and/or prevent disease; however, nutraceuticals may be desirable for someone seeking an alternative to conventional medicine.

Nutrients and Genes in Cancer Development

Katherine Jastrzab, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Both genes and diet influence cancer development and prevention. Though genetic predisposition for cancer cannot be changed, diet and lifestyle can be modified to lower cancer risk. The aim of my research is to explore the interrelationship between impact of diet and lifestyle factors, such as food, nutrition, stress, and toxins on gene expression and cancer development by reviewing literature on the topic. An article in the Journal of Microscopy and Ultrastructure describes how certain foods have ingredients with protective qualities while others cause changes in genes associated with cancer development. Food ingredients that affect our health are called bioactive food ingredients. There are several ways bioactive ingredients interact with genes related to cancer. Bioactive ingredients can cause normal cells to progress into abnormal cancer cells by preventing programmed cell death called "apoptosis." Dietary factors can help regulate major checkpoints in the cell's lifecycle, such as apoptosis, either inhibiting or exacerbating tumor growth. Diet can cause mutations in the gene itself, leading to cancer development. Additionally, foods can lead to DNA methylation, a process in which the activity of a DNA section is changed without changing the sequence, turning certain genes off. If the methylated gene is a tumor-suppressing gene the result can be cancer growth. Certain genes affecting cancer development are impacted by bioactive ingredients. For example, red and processed meats have a carcinogenic (potential to cause cancer) effect on genes. Conversely, bioactive ingredients can have anticarcinogenic effects on genes, inhibiting the development of cancer. For example, calcium and vitamin D found in dairy foods can inhibit the development of colorectal cancer. A review of the current literature shows diet possesses the potential to mitigate genetic predisposition to develop cancer.

Nutrition in Skin Care: Sea Buckthorn Oil has Cosmetic Value

Angela Braun, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Hippophaes rhamnoides, more commonly known as Sea Buckthorn, is a bushy Eurasian shrub bearing orange berries. Oil can be extracted from either the seeds or the berry of the plant. The purpose of this research is to examine the medicinal and cosmetic value of Sea Buckthorn oil. This literature review was carried out to investigate the bioactive components of Sea Buckthorn berries/oil and their associated benefit(s). Sea Buckthorn oil has been utilized within non-conventional medicine and is currently used in an array of skin care products. Rich in vitamins and fatty acids, the oil is said to combat the natural aging process as well as to hydrate, rejuvenate and repair the epidermis. Some research has examined the internal use of Sea Buckthorn oil for the treatment of cardiovascular and other diseases; however, evidence is currently limited and possible side effects and/or drug interactions may be of concern to the average consumer. Marketed as a nutraceutical with an abundance of benefits, Sea Buckthorn berry oil has gained substantial attention within the cosmetic and dietary supplement industries. Nevertheless, additional research is endorsed by current literature in order to confirm the medicinal and/or cosmetic value of Sea Buckthorn berry oil as well as to explore possible implications. This poster presents current findings relevant to the dermatological use of Sea Buckthorn berry/oil and its potential use as a pharmaceutical ingredient.

Optimal Nutrition for Optimal Athletic Performance

Steven Warden, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Optimal nutrition is an essential component for peak sports performance. It is a key aspect in not only enhancing performance, but also aids in the process of conditioning, recovery, and the prevention of injuries. For many years research has been aimed towards the role of various nutrients, fluids, as well as supplements and their impact on exercise performance. I was curious about what foods and supplements can maximize athletic performance and conducted a literature review on the topic for the current poster. Although athletes tend to eat a well-balanced diet, there are several nutritional factors that are difficult to obtain at a sufficient level from a normal diet since athletes require more nutrients than the recommended daily allowances. Products that contain carbohydrates, protein, vitamins, or minerals are commonly used across the athletic population in an attempt to boost the values of recommended daily intakes. Certain food nutrients have been researched backed to elicit positive physiological effects, and could be considered useful in enhancing performance. However, it is clear that understanding the physiology of how nutrition and exercise coincide with one another is the key to optimizing performance. Once overlooked, nutrition's role in recovery and its correlation in enhancing performance is now a vastly growing topic of interest in the research community. Modifying food intake to work with the mechanisms of skeletal muscle repair will enhance the recovery process and in turn the ability to perform at an elite level. By implementing proper dietary strategies, recovery

efficiency will increase directly resulting in a decreased risk of injury as well as an increased career longevity.

Red Wine. Benefits Beyond Pleasure

Nicole Schuster, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

The study of red wine and its ability to promote anti-aging and longevity is becoming an increasingly researched topic. Red wine contains a naturally occurring phytoalexin polyphenol found in grape skin known as resveratrol. Resveratrol gained much of its fame after the awareness of its antioxidant, anti-inflammatory, anti-tumorigenic, and cardioprotective properties, as well as its blood sugar lowering abilities. That said, resveratrol has been found to provide a multitude of health benefits that may promote in anti-aging and longevity. It is suggested that resveratrol may mimic calorie restriction, a diet with minimized energy intake while also obtaining all other necessary nutrients, vitamins, and minerals. This is significant as a calorie restriction diet has been shown to provide multiple health benefits which may suggest the promotion of longevity. Some of these effects include expanded lifespan, energy expenditure and insulin sensitivity, decreased fat accumulation, and improved tissue pathology. Moreover, resveratrol fights against numerous diseases involved in the aging process including cancer, heart diseases, and inflammation. In summary, given the information provided through the E.H. Butler Library's scholarly and peer reviewed articles, the relationship between resveratrol in red wine and its impact on anti-aging and longevity still needs much research, though resveratrol does indeed provide many benefits in itself which may promote health.

Reducing Stress, Anxiety, and Depression with Meditation

Andrew Bush, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

This research project is a review of literature which aims to confirm if the ancient Eastern practice of meditation is effective in combating stress, anxiety, and depression. Epidemiological records from the National Institute of Mental Health indicate the prevalence of adults in the US who've experienced major episodes of depression was 16.2 million in 2016, with 19.1 million adults experiencing some form of anxiety disorder that same year. Chronic stress is a major contributor to the etiology of these mental conditions and managing chronic stress may help reduce the symptoms of these disorders and bring relief to those who suffer from them. Based on previous research, meditation is an effective, clinically proven technique for treating stress, anxiety and depression. Meditation is easily accessible, all natural, costs no money to do, and practicing meditation may help reduce symptoms of these mental disorders without bringing the unwanted side effects that pharmaceutical therapy may bring. Viewers of the presented poster for this research can expect to view statistics about the prevalence and etiology of anxiety disorders and depression, results from research showing how meditation is an effective technique, the origins of meditation, types of meditation, and step-by-step instructions on how to meditate so that they, themselves, can practice for management of stress levels.

Shiitake Mushroom Benefits

Tara Cloutier, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

The Shiitake mushroom is a widely popular Asian mushroom, known for its meaty texture and robust flavor, used over the centuries for both culinary and medicinal purposes. Shiitake Mushrooms are well-known for their many health benefits. I, as a Dietetics student, was intrigued to find what nutrients or chemical compounds render these health benefits. I searched and reviewed the literature on the Shiitake mushroom. There have been claims that these mushrooms have the potential to lower blood cholesterol, support immune function, even possibly destroy cancer cells. My research found that Shiitake mushrooms are not only loaded with nutrients, such as selenium, iron and dietary fiber, but also certain nontoxic polysaccharide substances such as beta-glucans, lentinan, eritadinine and L-ergothioneine. Studies have shown that Shiitake mushrooms, through the immune-enhancing action of beta-glucan and lentinan can slow the growth of cancerous tumors. These benefits come from a powder, an extract, or whole mushroom. In my study, I will present a comprehensive outlook of the anticarcinogenic, antilipidemic and immune effects that this edible fungus has to offer. Make sure to enjoy the Shiitake Mushroom or it's product to enhance your culinary experience and enhance your health.

The Significance of Traditional Chinese Medicine For Health Care in America

Zach Finney, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

This research project aims to review the available, and most recent scientific literature to determine the significance of Traditional Chinese Medicine (TCM) for health care in America. TCM focuses on a number of various healing methodologies, all based on the principle of Yin/Yang, two opposing forces or elements that constitute all matters including human body, Qi and foods. Balance of the two forces, namely yin and yang,

makes up a healthy life. TCM operates on the belief that if one is successful at managing these two forces, then health and vitality can be achieved. As these two energies become more out of balance, risk for developing disease increases. Current research from the NCCIH suggests that some of the TCM modalities such as meditation, Tai-Chi and Qi-Gong have some healing benefits, and others such as herbal medicines and acupuncture may require more research to assess objective health outcomes. My poster will include a variety of these TCM practices including meditation, tai-chi, qi-gong, herbal medicines, massage and acupuncture. My poster will also present the philosophy and mechanisms by which these practices are thought to heal the body. Finally my poster will attempt to outline which ones have been studied, which have yet to be, and what the current research concludes about them. By presenting this poster, viewers can begin to decide for themselves the significance of TCM in our current health care paradigm.

Social Media: Its Addictive Nature and Its Effects on Its Users

Kaylee Gorney, Ibrahim Mberwia, Nakai Payne and **Steven Phengsomphane,** CWP 102: Argumentation and Research
Faculty Mentor: Professor Jane Sullivan, Writing Program

Social media use has been a reoccurring issue that places undue stresses on the mental health of its various users. It is an essential worry in the world we live in today due to the large-scale use of social applications and the large amounts of time invested by individuals on social media. We believe this scale of use and investment will lead to a lack of academic success by first-year students in an urban four-year college. With prior IRB approval, we will complete a comprehensive literature review to create a survey instrument to study the short and long term effects of social media use on the mental health and academic success of first-year students in an urban four-year college, believing we will find a correlation between excessive use to a lack of academic success and increased need for mental health intervention during the first year of school.

Teaching Positive Behavior Support to Preschool Teachers in Trinidad: Class Wide Function-Related Intervention Teams Tier 1

Mackenzie Zakowski, SWK 499: International Social Work with Children
Faculty Mentors: Professor Dr Kimberely Zittel-Barr, Social Work, Professor Dr. Jessica Fitzpatrick, Social Work and Dr. Dr. M. Dian Chin Kit-Wells, DSS

The purpose of this project was to examine the impact of teaching preschool educators the evidence-based intervention, Class-Wide Function-related Intervention Teams (CW-FIT), a classroom management system aimed at improving engagement during academic instruction. Preschool educators at the Naomi Chin Kit Memorial School in Point Fortin, Trinidad learned how to apply tier 1 of CW-FIT in the classroom. This intervention trains teachers to implement target behaviors of gaining the teacher's attention, following directions, and ignoring inappropriate behaviors through a group contingent game within the classroom. The groups consist of the children being put into teams and points are awarded every 2-5 minutes to groups displaying the behavioral skills. Quantitative and qualitative surveys were used to assess for the teacher's knowledge of behaviors, behaviors management, and frequency of behaviors in the classroom prior to receiving education on the intervention and after to examine what has been learned and if the intervention impacted behaviors. Quantitative results found that statistically significant findings regarding how often children received consequences, reprimands or discipline when displaying inappropriate or difficult behaviors. Qualitative results found that during pretest, teachers reported themes focused on children's social interactions among peers; whereas during posttest, teachers reported themes focused on children's social interactions during class. Teachers reported themes of verbal praise, incentives and peer recognition during pre- and posttest. It was also found that during pretest, teachers reported themes of inappropriate of difficult physical behaviors; whereas in posttest, teachers reported verbal disruptions only.

The Truth About GMFs: A Look into Genetically Modified Foods and Their Safety

Staci Owens, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Genetically modified foods, also referred to as genetically engineered foods (GMFs), have become a major topic of discussion in recent years. Since 1994 when the first GMF product hit consumer shelves, GMF development and growth has rapidly escalated. According to the United States Department of Agriculture, 90% of all-American grown corn and 94% of American grown soybeans are genetically modified. These two products are staples in American food and are in a variety of processed foods. It has been estimated that between 60-70% of processed food contain GMFs. With the increase in popularity, it is no surprise that consumers have become apprehensive toward GMFs and whether they are a safe. In a study by the Hartman Group research firm, avoidance of GMFs has gone from 15% in 2007 to 46% in 2018. This consumer opposition has grown due to the absence of appropriate regulation of GMFs by the American government. By conducting a scientific literature search, I have gathered research about GMFs, their current federal

regulations and the safety of these foods. My research will show whether consumer's concerns of safety is rational or if genetic modification is the new safe and effective way to produce food.

Turmeric and Black Pepper: Better Together for Enhanced Supplemental Efficacy

Aaron Jeff, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Turmeric, a deeply orange hued rhizome, very similar to the ginger root, has been long known and utilized in Indian traditional Ayurvedic medicine for many ailments. Its widespread modern usage as a supplement for pain-relief, especially among those with arthritis or other chronic inflammatory diseases, stands as a lasting testament to this herb's efficacious and proven properties. It is a known antioxidant, having antimicrobial, antifungal, and anti-septic usage. Its antimutagenic properties have even shown anti-cancerous properties. In fact, turmeric has hundreds of molecular constituents that each maintain a varied amount of biological activities (326 are currently known). For the purpose of this abstract, turmeric's role as an anti-inflammatory agent will be examined. The active ingredient of turmeric is the polyphenol known as curcumin, and other various curcuminoids. It is these substances that are isolated and used for effective pain-relief. Most of the research done has been with 95% curcuminoid extract of turmeric, though in its raw state, this herb is only 3-5% curcuminoids. The increased absorption of curcumin in combination with a molecule within black pepper known as piperine, or bioperine, has also been studied. Piperine greatly enhances the bio-availability and thus the absorption and usage of curcumin within the body. If used as a supplement for pain relief, it is recommended to combine any dosage of turmeric with a small amount of ground black pepper for increased efficacy.

Vaccine Effectiveness: A Case Study for Natural Immunity

Jiselle Abraham, Christina Luduku and **Saran Kaba,** CWP 102: Argumentation and Research
Faculty Mentors: Professor Jane Sullivan, Writing Program and Professor Susan Mary Paige, New Student Academic Programs

Two-thirds of Americans support mandatory childhood vaccinations, but what about the other third? This third currently strives to re-educate the American community about the safety and effectiveness of vaccinations, challenging old beliefs. Additionally, there are religious implications concerning vaccines recognized by the state governments as a reason not to vaccinate. We intend to articulate the pros and cons of the debate, ultimately providing support to the effort to re-educate society about the current effectiveness and safety, or lack thereof, of vaccinations. To do this, we will present a comprehensive literature review of recent studies and seek the personal stories of people and how vaccinations have both helped and hindered interviewees. We will attempt to answer the questions about the safety both of the vaccines and of society if a segment of the population chooses to forgo vaccinations. We will seek to show that there is not a direct correlation between having less of the populous vaccinated and the current spike in the resurgence of some diseases thought eradicated from society. Specifically, we will, with prior IRB approval, randomly select 64 vaccinated people to see what illnesses they have and what side-effects they experience from the vaccine; we will randomly select 33 people who are not vaccinated to see what illness they contract.

Vaping Creates New Era of Marijuana Smokers.

Mervy Guerrero, Ryan Rivera, Stephen Nielsen and **Rogueilis Joseph,** CWP 102: Argumentation and Research
Faculty Mentors: Professor Jane Sullivan, Writing Program and Professor Susan Mary Paige, New Student Academic Programs

For years, health care providers have fought against the negative health effects of tobacco consumption. New technologies, specifically vaping, have expanded these negative effects, but younger generations believe the negative effects of traditional smoker are not present in vaping. Corporations are creating a new generation of smokers. Additionally vaping has changed the landscape of marijuana use, making the high faster and stronger. This research project will look to uncover the trends of corporate targeting of first-year college students; current trends of research into possible risks, outcomes and long term effects of vaping (and in particular examining vaping marijuana usage) including academic effects, both short and long term; and the current education or lack thereof of the typical college student in regard to the dangers of vaping. The method of research will include literature reviews of current research, and, with IRB approval, surveys and interview with current college students in an urban four year college program.

Vitamin D Beyond Bone Health

Ibrahime Almajid, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition and Dietetics

It is well established that vitamin D's primary function is to help maintain bones health by elevating plasma calcium and phosphorus levels, leading to mineralization of the skeleton. However, the discovery that vitamin D receptors are found in many tissues other than those related to bones and calcium have lead to further investigations into other potential roles of vitamin D. Many observational studies and few randomized control trials,

therefore, have provided insights into possible roles of vitamin D in various health issues and diseases. It has been suggested that vitamin D has a role in autoimmune diseases, cardiovascular diseases, infectious diseases, and cancer. Nevertheless, studies have been limited as well as very inconsistent about these roles that vitamin D is thought to play. This poster will review the literature about the effects vitamin D can have on tissues other than bone as well as it will explain the inconsistencies and limitations of those studies.

Widowed Older Adults and the Resulting Psychological Issues

Benjamin Leopold, HON 400: All College Honors Colloquium
Faculty Mentor: Professor Jacqueline McGinney, Social Work

Older adults are considered to be among the most at-risk for developing mental health issues. There are many factors that can contribute to psychological issues in later life, including the loss of a partner or spouse. Understanding the effects of this kind of loss on a vulnerable population is critical in providing adequate care. A query of scholarly databases was conducted to locate relevant qualitative and quantitative research articles regarding the topic of widowed older adults and their mental health. Potential articles were analyzed for their content by looking at both the topic of research, as well as the rigor of the researchers' methodologies. It was discovered that older adults who are widowed have been shown to have different psychological problems than others in the same age group. Older adults are already a vulnerable population, with regard to depression and anxiety. These mental health concerns can be exacerbated or trigger by the loss of a spouse. Gender differences do not appear to be a significant predictor of late-life mental health issues in widows or widowers. However, the available research suggests that time has a mediating effect on bereavement symptoms, including mental health concerns. It was concluded that older adults appear to be at increased risk for experiencing some mental health issues in later life, particularly following the death of a spouse or partner. While death is a common aspect of life, its occurrence during such a vulnerable period can be cause for concern, especially for this population.

Your Head to Your Gut: Integrative Therapies for Mental Illness

Kristen George, NFS 330: Integrative and Functional Nutrition
Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Roughly 1 in 5 US adults will experience a mental illness. Of the mental illnesses that the American adult population experiences, 2.6% (or 6.1 million) live with bipolar disorder, 6.9% (16 million) live with major depression, and 18.1% (42 million) live with an anxiety disorder. Worldwide, one of the major contributors to disease burden and the #1 cause of disability, is depression. Currently, favored treatment practices such as Cognitive-Behavioral Therapy (CBT), while generally effective, often overlooks extrinsic factors like nutrition, interpersonal distress, and environment, which play major roles in managing and improving a mental illness. The inattention to these extrinsic factors emphasizes the value of treating mental illnesses with integrative and functional therapies (IFT) as complementary to CBT. IFT research has found mental health implications in a variety of areas, ranging from how the composition of intestinal bacteria affects mood regulation, to the benefits of meditation on interpersonal effectiveness and distress tolerance. Recent studied have shown when IFT is combined with cognitive-behavioral therapy in treatment of generalized anxiety disorder, there is significant improvement in symptom reduction and maintenance of gains compared to solely utilizing CBT. This presentation aims to bring light to the methods and efficacy of promising integrative therapies, and how they can be utilized to greatly improve the approaches in place for mental health treatment.

Mathematics

Analyzing the Inflammatory Response to a Bacterial Infection in Rats

Allison Torsey, Applied Mathematics and Physics
Faculty Mentor: Professor Saziye Bayram, Mathematics

Sepsis is a serious health condition defined by an overactive immune response that causes severe damage to healthy tissue, often resulting in death. Mathematical modeling has emerged as a useful tool to investigate key elements of the immune response and thus offers a useful method for studying sepsis. Here, a system of four ordinary differential equations is developed to simulate the dynamics of bacteria, the pro-inflammatory immune response, anti-inflammatory immune response, and tissue damage. The model is used to assess the conditions under which health, aseptic (inflammation-driven) death, or septic (bacteria-driven) death is predicted in both the presence and absence of an induced E. coli bacterial infection in rats. Model parameters are fit to experimental data from rat sepsis studies. The model is used to predict the survivability range for an infection while varying the initial amount, growth rate, or virulence of the bacteria in the system. For highly virulent strains of bacteria, aseptic or septic death is predicted for very small levels of initial bacterial loads. Model predictions are also used to explain the experimentally observed variability in the mortality rates among rats.

Connecting Groups and Homomorphisms

Ryan Cretacci, MAT 491: Capstone Research in Mathematics
Faculty Mentor: Professor Daniel Cunningham, Mathematics

In mathematics, a group is a set equipped with a binary operation that combines any two elements to form a third element in the set such that three conditions called group axioms are satisfied, namely, associativity, identity, and invertibility. A subset of a group G is called a subgroup of G if it forms a group under the same binary operation as G. In group theory, the most important kind of function between two groups is one that "preserves" the group operations, and such a function is called a homomorphism. I will present and prove a theorem that connects subgroups and homomorphisms.

A Consequence of Continuity and the Least Upper Bound Property

Abbie Miller, MAT 491: Capstone Research in Mathematics
Faculty Mentor: Professor Daniel Cunningham, Mathematics

In real analysis, continuity is an extremely important concept that allows one to know certain properties about a function. A function is said to be "continuous" when a small change in the input results in a small change in the output. A function is said to be continuous on the interval [a,b] if it is continuous at each point in the interval. Another important concept in real analysis is the least upper bound property. In a set of nonempty real numbers, S, if there is a b in the set of real numbers such that every real number in S is less than or equal to b, then it is said that b is an upper bound for S and that S is bounded above. Now, suppose B is an upper bound for S. If B is the "least upper bound" for S (i.e., the smallest upper bound for S), then B is called the supremum of S. Knowing the supremum of a set is important when solving problems and proving theorems in real analysis. We will use the properties of continuity and the least upper bound to prove such a theorem.

Data Analysis of Digital Painting Images

Lu Xu, ACM 690: Internship in Applied & Computational Math
Faculty Mentors: Professor Joaquin Carbonara, Mathematics and Professor Jiuan Jiuan Chen, Art Conservation

The purpose of this internship project is to develop effective methods to analyze digital images of paintings taken by different photography techniques. False and unexpected color responses in images under different lighting conditions reveal various pigments and materials and opens the door to other discoveries. In fact, just classifying and analyzing the discovered pigments and materials used by the artist provides useful insights about the painting. In this project we use Python since the flexibility and expressiveness of that programming language, along with advanced mathematical techniques, allows for unlimited queries to reveal issues not even imagined at first.

Error-Correcting Codes and Block Designs

Heba Ibrahim, MAT 491: Capstone Research in Mathematics
Faculty Mentor: Professor Robin Sanders, Mathematics

Hamming first studied error-correcting codes (ECC) in the 1950s when he needed a way to detect and correct errors in the transmission of data. ECCs are still used today in the transmission of electronic data. ECCs are used to take information in n-bit words and turn them into k-bit words so that when random errors occur during transmission, we can detect and correct the errors, and then decode to restore the original message. Different types of ECCs are used to correct different types of error patterns. Combinatorial designs were first studied by Fisher and Yates in the 1930s when they were designing agricultural experiments. A combinatorial design is a mathematical object formed from a set of varieties by creating a multiset of blocks where each block contains exactly k varieties and each variety appears in exactly r blocks. Special kinds of designs, such as balanced incomplete block designs (BIBD) are used to build ECCs. To build an ECC from a BIBD you look at the incidence matrix for the BIBD and

manipulate it to get a matrix that does the encoding for the ECC. In this talk I will show how to use BIBDs to create Hamming codes and Golay codes by using specific properties of the BIBD.

A Finite Quotient of a Group Puts a Power Bound on the Elements of the Group

Veronique Budd-Nicholas, MAT 491: Capstone Research in Mathematics
Faculty Mentor: Professor Daniel Cunningham, Mathematics

We will present the definitions of a group and a normal subgroup, which are two very important concepts in abstract algebra. Given a normal subgroup H of a group G, it can be verified that the cosets of G relative to H form a group. This group is called the quotient group of G relative to H and is denoted G/H. We will present and prove a theorem that connects the concepts of a group, a normal subgroup, and the associated quotient group.

Images and Inverse Images of Homomorphisms in Group Theory

Aleaster Williams, MAT 491: Capstone Research in Mathematics
Faculty Mentor: Professor Daniel Cunningham, Mathematics

We will be discussing groups, subgroups, and the kernel, image and inverse image of a homomorphism. These are fundamental concepts in the branch of mathematics called abstract algebra. After defining the product of two subgroups, we will present and prove a theorem that connects and relates all of these concepts. We will first identify the relevant definitions and theorems that will allow us to establish the validity of the theorem.

A Normal Subgoup Induced by a Homomorphism Property

Abdulkhaliq Edan, MAT 491: Capstone Research in Mathematics
Faculty Mentor: Professor Daniel Cunningham, Mathematics

In modern algebra, a group consists of a set of elements and a binary operation that satisfies the group axioms. Groups are vital to modern algebra; their basic structure can be found in many mathematical phenomena. A normal subgroup is a subset of a group that also satisfies the group axioms and satisfies a special closure condition. A group homomorphism is a function between two groups that preserves all the basic algebraic structure of the domain group. After discussing groups, normal subgroups, and homomorphisms, I will present and prove a theorem that relates these three fundamental concepts.

On Functions of Bounded Variation

Maria Wood, MAT 491: Capstone Research in Mathematics
Faculty Mentor: Professor Daniel Cunningham, Mathematics

In mathematics, real analysis is a branch of mathematics that studies the behavior of real-valued functions. A function f is of bounded variation if the total vertical distance traveled by a particle that moves along the graph of f from (a,f(a)) to (b,f(b)) is finite. We will precisely define the concept of bounded variation and present a proof of a theorem that states that the sum of two functions of bounded variation is also of bounded variation. Functions of bounded variation appear in many applications in mathematics (for example, in generalizations of the Riemann integral and in Fourier series).

On Uniformly Continuity

Josh Henderson, MAT 491: Capstone Research in Mathematics
Faculty Mentor: Professor Daniel Cunningham, Mathematics

Real Analysis is the branch of mathematics that studies real-valued functions. The subject is generally reserved for advanced topics which are not encountered in an introductory calculus sequence, although many ideas from those courses, such as derivatives, integrals, and series are studied in more detail. According to the definition introduced by Cauchy, and developed by Weierstrass, continuous functions are functions that take nearby values at nearby points. Uniform continuity is a subtle but powerful strengthening of the continuity concept. We will review the definitions of these and related concepts. We will then introduce and prove a theorem which states that if a function is increasing, bounded, and continuous, then it is uniformly continuous.

Osteoporosis-Related Fractures in Postmenopausal Women

Jacquelyn Dufresne, AMT 495: Applied Mathematics Project
Faculty Mentors: Professor Chaitali Ghosh, Mathematics and Professor Joaquin Carbonara, Mathematics

Osteoporosis is a skeletal disease characterized by low bow mineral density (BMD), the deterioration of bone tissue, and disruption of bone microarchitecture which increases the risk of bone fracture. It develops through an imbalance in the rebuilding rate of bone tissue that is continuously lost by resorption. An estimated 200 million people are affected worldwide by osteoporosis with approximately 1.5 million osteoporosis-related fractures globally each year. Postmenopausal women are especially susceptible to osteoporosis, as estrogen production significantly decreases, resulting in a lower BMD. Osteoporosis is a major public health concern due to its undetectable nature until a fracture, and its devastating effects such as a decreased

quality of life, mortality, and increased health care costs. Addressing risk factors for fracture is important to obtain a deeper understanding of this silent disease. This project aims to identify risk factors that predict an osteoporosis-related fracture during the first year of follow-up in an observational study including 500 postmenopausal women. Self-perception of fracture risk is also compared with actual risk from the data. Potential predictors such as history of prior fracture, age, body mass index, early menopause, hip fracture in mother, arms needed to stand from chair, smoking status, self-reported risk of fracture, and composite risk score, are considered using standard statistical analysis.

Random Generators

Tierra Purdue, Applied Mathematics and Shanei Salmon, Applied Mathematics
Faculty Mentor: Professor Valentin Brimkov, Mathematics

In this day and age, random number generators and random sequences are used often. For example, we use it for lottery and gambling systems and computer programing to solve challenging problems. There are a variety of problems that range from communication around the internet to trying to find the best stock to invest in. Those were just a few examples of how we use random number generators and sequences, there are many more that these help us with. Even though a lot of research have been done on random sequences and random number generators us as mathematicians still want to find a satisfactory definition on these matters. There are many kinds of random generators that help people get the most accurate data for there different conditions. In this paper we first disclose the importance and applicability of random number generators and sequences. Then we review numerous definitions and approaches for defining random sequences and debate on their adequacy. We also present different random number generators and demonstrate how they work. Finally, we propose a solution to a specific problem using random sequence generation, which is potentially applicable to biosequence analysis.

Two Almost Disjoint Normal Subgroups

Tadeus Krupa, MAT 491: Capstone Research in Mathematics
Faculty Mentor: Professor Daniel Cunningham, Mathematics

In mathematics and abstract algebra, group theory studies the algebraic structures known as groups. The concept of a group is central to abstract algebra: other well-known algebraic structures, such as rings, fields, and vector spaces, can all be seen as groups endowed with additional operations and axioms. Groups occur throughout mathematics, and the methods of group theory have influenced many parts of algebra. We will define the group concept and the notions of a normal subgroup. We will present and prove a theorem that the elements of two normal subgroups commute when the intersection of these two groups is just the identity element.

When are Conjugate Automorphisms Equal?

Sanji Downing, MAT 491: Capstone Research in Mathematics
Faculty Mentor: Professor Daniel Cunningham, Mathematics

Group theory is the study of groups. Groups are sets equipped with an operation (like multiplication, addition, or composition) that satisfy certain basic properties. As the building blocks of abstract algebra, groups are so general and fundamental that they arise in nearly every branch of mathematics and the sciences. A group conjugate automorphism is a bijective homomorphism from a group to itself. The center of a group is the set of all the elements of the group that commutes with every element of the group. After defining the above concepts, we will present and prove a theorem that relates conjugate automorphisms with the center of the group.

The Wildebeest Theory: Modeling the Serengeti-Mara Parks Community

Lara Bannister, MAT 495: Special Project
Faculty Mentor: Professor Saziye Bayram, Mathematics

My mathematical model is aimed to model the Serengeti National and Masai Mara National Parks communities ecosystem. I have constructed mathematical models (both using differential and difference equations) and studied these models by programming in R. Inspired by the classic SIR (Susceptible, Infected, Removed) models, this virtual community intends to describe the relationships and their populations dynamics that exist within the real community. My simulated models use a system of differential/difference equations, and my assumptions are made as necessary to ensure precision and feasibility for the scope of the model. The steady state stability of this community is studied and will be discussed during my presentation. Furthermore, a sensitivity analysis is performed on the parameters. If time allows, those results will also be presented.

Physical Geography and Sciences

Adsorption of Hydrocarbons in Gasoline Residues on Cotton Fabric, Carpet Fibers, and Cardboard for Forensic Fire Investigation

Eric Frauenhofer, Forensic Chemistry and Carleigh Cimmerer, Forensic Chemistry
Faculty Mentor: Professor Jamie Kim, Chemistry

The adsorption of six compounds, found in gasoline residues, on three common household materials was studied using inverse gas chromatography (IGC). Cotton fabric, carpet fibers, and cardboard were selected as household materials and used as solid substrates. n-Heptane, n-octane, n-nonane, toluene, p-xylene, and 1,2,4-trimethylbenzene (TMB) were selected as components in gasoline residues. From IGC experiments, adsorption isotherms, molar enthalpies of adsorption, and solubility coefficients for these compounds on each solid substrate were estimated. These values depended on the composition and porosity of the substrates and the size, structure, and polarity of the adsorbed hydrocarbons. Hydrocarbons with larger molar mass (e.g., n-nonane and TMB) had more negative molar enthalpies of adsorption and larger solubility coefficients. Cardboard, which is more porous than either cotton fabric or carpet fibers, was found to be a better adsorbent for all of the hydrocarbons. These findings are significant to forensic fire investigations as they may help understand the transfer and persistence of ignitable liquids including gasoline residues.

Analysis of Periosteal New Bone in Human Skeletal Remains

Eric Frauenhofer, Forensic Chemistry and Individualized Studies
Faculty Mentor: Professor Julie Wieczkowski, Anthropology

A comprehensive study of periosteal new bone (PNB), also known as a periosteal reaction or periosteal lesion, in human skeletal remains was conducted. Eighty-nine adult individuals from the Hamann-Todd Osteological Collection, a documented skeletal collection at the Cleveland Museum of Natural History, were studied. My sample consisted of both sexes of European and African descent with an approximate age range of 20 to 89 years. Each individual had at least one bone exhibiting PNB. I macroscopically characterized each periosteal lesion based on anatomical location, size, maturity, type of periosteal reaction, vascularity, and, for affected long bones, severity. IBM SPSS Statistics was used for inferential statistical analyses. The long bones, particularly of the lower limb, are the most frequently affected. The tibia is the most frequently affected bone, which is consistent with the literature. The second and third most affected bones are the fibula and femur. Furthermore, the area of lesions affecting long bones is, on average, four times greater than the area of lesions affecting non-long bones. Additionally, the maximum elevation of lesions is most often less than two millimeters. Most lesions have mixed vascularity consisting of both striations and foramina. Most lesions are a mixture of woven and lamellar bone, indicating healing. Most lesions affecting long bones have smooth and undamaged surfaces. Periosteal reactions did not increase with age. Males and females were affected as expected based on their representation in the Hamann-Todd Osteological Collection. The study offers recommendations for improving PNB data collection methods.

Angular Relationship of Matrix Minerals and Porphyroblast Inclusion Trails

Garrett Braniecki, HON 400: All College Honors Colloquium
Faculty Mentors: Professor Gary Solar, Earth Sciences and Science Education and Professor Andrea Guiati, Modern and Classical Languages

A question often asked in the world of geology is "Do porphyroblasts rotate?" Porphyroblasts are larger crystals grown during metamorphism in some rocks during mountain-building events. Some geologists believe that they do rotate during metamorphism, which causes the foliation patterns of the matrix to have an angular relationship to the porphyroblasts. If this were not the case, then the mineral patterns found within the porphyroblast (trails) would be parallel to the matrix foliation. Some geologists believe porphyroblasts do not rotate but rather the matrix rotates due to a change in stress direction during metamorphism. By studying the angular relationships between porphyroblasts and the surrounding matrix, tectonic stress directions can be determined. I used thin sections produced from oriented metamorphic rocks found in Western Connecticut and measured the angle between the matrix minerals (the small, most common minerals found within the rock that share the same foliation) and the porphyroblast (single minerals that grow much larger than the surrounding minerals). After I measured porphyroblasts from multiple rock samples, I used the literature on the subject to come to a conclusion of my own on whether porphyroblast rotate or do not rotate.

Climate, Vegetation, and Ethnobotanical Plants at La Botica Archaeological Site

Chloe Mokadam, Biology
Faculty Mentor: Professor Camille Holmgren, Geography and Planning

La Botica is an ancient medicinal plant gathering site in the San Luis Valley of south-central Colorado that has an 8000 year-long history of human use. Current research at the site

includes archaeological surveys as well as reconstruction of the long-term vegetation history from packrat middens. To better understand any past changes in vegetation, it is important to understand the state of the modern plant community. Using the results of a vegetation survey and climate data gathered from surrounding weather stations, I created a detailed description of the site's modern plant community based on elevation and important climate variables including minimum and maximum temperature, and precipitation. Between 2412 m and 2670 m, the climate is hot and dry, with high maximum and minimum temperatures and low precipitation. This correlates to the sparse and shrubby Juniper-Sagebrush habitat. Between 2670 m and 2700 m, the climate is cool and wet, with lower maximum and minimum temperatures and higher average monthly precipitation. This supports the more densely forested Spruce-Juniper habitat. Many of the dominant plant species at the survey site have broad ecological amplitudes, and ethnobotanically important plants are found spanning the entire elevational range. La Botica contains several areas of microclimates, which may contribute to the variety of ethnobotanically important plants found at the site. My presentation will consist of a poster that will include pictures of the site, a species plot created from data collected during the vegetation survey, and climate data from weather stations near the site.

Documenting Changes to an Urban River Undergoing Sediment Removal: Restoration of the Buffalo River

Nicole Bulger and **Skyler Paternostro,** GES 433: Geology Independent Research
Faculty Mentor: Professor Jill Singer, Earth Sciences and Science Education

The Buffalo River is identified as a Great Lakes Areas of Concern (AoC) because of a number of environmental impairments including contaminated sediments. As the river undergoes remediation in order to be delisted as an AoC, a management decision was made to remove the most contaminated sediment in a multi-year environmental dredging project. This project took place between 2011 and 2015. A base map of the Buffalo River was created that included the dredge cells for each year of the dredging project. To determine the volume of sediment removed from each cell, the United States Army Corps of Engineers (USACE) annually conducted high resolution bathymetric surveys. DEMs were made for the period 2010 – 2017 and the stack-profile tool in ArcMap was used to create bank-to-bank profiles. These profiles provide a temporal record that spans the period before, during, and after the environmental dredging project to document how channel geometry changed as a result of sediment removal. Channel cross-sectional profiles illustrate how the river's width and depth increased, as well as identify locations of possible slumping from bank over-steepening and re-sedimentation associated with dredging and natural processes. To further understand the impact of dredging and its disturbance on the river, annual side scan sonar surveys were conducted between 2011 and 2018. This study offers an opportunity to document how the Buffalo River was affected by the removal of sediment and its subsequent response. The findings also offer insights into other urban rivers where environment restoration includes the removal of contaminate sediments.

Drone Remote Survey on Current Conditions of Como Park Dam

Joseph Bodnarchuk, GEG 518: Remote Sensing
Faculty Mentors: Professor Tao Tang, Geography and Planning and Professor Lisa Matthies-Wiza, Director of GIS Service, Erie County Environment & Planning Department

Erie County owns eight dams that need to be regularly inspected for structural conditions, which are essential to the operation of the dam and its environmental impact. The cost to repair degrading structures can be quickly inflated beyond allocated budgets. Understanding current conditions of the dams will offer a perspective as to what repairs, if any are needed and their immediate impact upon a watershed and environment. In this study, we conducted drone remote sensing on the Como Park Dam located along the Cayuga Creek in Como Park in Lancaster, NY. We analyzed degradation to the dam, soil/embankment erosion, and land-use in the area. The DJI Pro Mavic was used for aerial image capture and ERDAS Imagine and DJI Pix 4D software were used for digital data processing. Images were taken at a 75-meter altitude. 100 good quality aerial images were used in this project. Supervised Classification was applied for land-use classification. An elevation map was created for 3-D modeling and mapping. The research identified several land-use types changed owing to the degraded leaves that skewed the results. Analyzing the 3-D models and high-water volume in the reservoir concluded that the structural degradation of the dam is very minimum. Owing to the growth of heavy woods of various tree species, this research suggested that a summer field investigation with a larger drone and higher flying altitude is needed for a more accurate research.

Flood Insurance Impact Survey for Residents in Lake Erie Watershed

Joseph Bodnarchuk, GEG 525: Fundamentals in GIS
Faculty Mentors: Professor Tao Tang, Geography and Planning and Professor Lisa Matthies-Wiza, Director of GIS Service, Erie County Environment & Planning Department

Flooding is a worldwide disaster that is predictable. It is a combination of heavy rainfall and geographic areas of low elevation, and often creates human life and property loses. It is necessary to understand its impacts, especially in residential regions. The objective of this study is to identify Erie and Niagara counties land owner parcels within the 100-year and 500-year flood plain areas. The frequencies of flooding, such as 100-year, means the flooding will have a high probability to occur within 100 years. Flooding frequencies in a location impacts the flood insurance premium a household needs to purchase. ArcGIS software was used to conduct map overlays to generate digital results. The results show that a total of 358,273 parcels are located within Erie County, with 52,085 parcels within the 100-year and 500-year floodplains. A total of 24,321 parcels are at risk in the 100-year flood zone. 14.5% of the Erie County parcels are at risk of being inundated by a large-scale flood. Of the 14.5%, 6.8% are in the 100-year flood zone and 7.7% are inside a 500-year flood event. Surprisingly, more parcels were located in the 500-year flood zone compared to the 100-year flood zone. Out of the parcels in the 500-year flood zone, more than one-third were centralized in one municipality in the northern region of Erie County. We conclude the higher flood zone ratio is due to the flat and low geographic elevation in urbanized northern Erie County compared to the varying terrain of Southern Erie County.

Gold Nanoparticle Size Effect on the SERS Signals of Rhodamine 6G

Ashleigh Coggins, Forensic Chemistry
Faculty Mentor: Professor Jinseok Heo, Chemistry

Raman spectroscopy is an analytical method used to identify chemical compounds. It relies on the Raman scattering signals that contain information on the vibrational energy levels of the compound's chemical bonds. However, a disadvantage of using Raman spectroscopy is that the collected signals are intrinsically weak, which limits its applications for highly sensitive chemical detection. One way of overcoming this problem is to utilize Surface Enhanced Raman Spectroscopy (SERS). The Raman signals of molecules can be enhanced when they are in close proximity with gold (Au) or silver (Ag) that can show surface plasmon resonance, a collective oscillation of electrons that enhances the electromagnetic (EM) field. We recently discovered that gold nanoparticles (AuNPs) could be aggregated by quickly freezing their aqueous solution in liquid nitrogen. The quick-freezing method could control the extent of aggregation and create reproducible aggregate samples that are ideal for use in near-IR region SERS. To expand on previous research, we examined the effect of AuNP sizes on their ability to detect Rhodamine 6G (R6G), a well-known Raman dye. AuNP aggregates were made with four sizes of citrate-capped AuNPs: 15, 30, 50, and 70 nm in average diameter. These AuNPs were characterized using UV-Vis absorption spectroscopy and Raman spectroscopy to observe the size effect on the extent of aggregation and the SERS signals in the near-IR region. We discovered that except for the 15 nm AuNPs, the AuNP size did not affect the formation of AuNP aggregates that can be used for near-IR SERS. Another important discovery was that the AuNP aggregates prepared from 70 nm AuNP solution exhibited the best results in terms of the dynamic range and the detection limit.

Grain-Scale Evidence, Mountainous Implications: Microtectonics of Western Connecticut

Colin Griffin, Earth Sciences
Faculty Mentor: Professor Gary Solar, Earth Sciences and Science Education

The Rowe-Hawley Belt schists, mid-high grade metamorphic rocks occurring in western Connecticut, have recorded some of the most significant geological events in the history of North America. These staurolite-garnet mica-schists are exposed in outcrops east of Cameron's Line, which is believed to be the ancient edge of North America (up to ca. 470 million years ago), to which nearly all of geographical New England was accreted to the continent through tectonic collisions beginning around 465 million years ago. The rocks have been studied extensively in the field, and this study contributes microstructural data to the ongoing work being done. Evidence of the tectonic plate collisions in question exists at the grain scale, and can be studied and measured through the use of polarized transmitted-light microscopy (petrography) of thin sections. Thin sections were prepared from specimens carefully selected from a suite of rocks collected in the field in western Connecticut. They were then described and measured extensively, with the main focus of the study on porphyroblasts, or larger mineral growths resulting from metamorphism. As porphyroblasts form, they overgrow the existing matrix fabric patterns, preserving parts of it as inclusions. While subsequent deformational events may alter the matrix, these inclusions are preserved and reflect the original matrix at the time of growth. Measurements were made of overall porphyroblast size, core and rim sizes, tail dimensions and attitudes, and inclusion trail geometry as it relates to the existing matrix fabric. All of these data are reconciled to form interpretations of the tectonic history as told by the rock itself. Data documented show strong, consistent evidence of two or possibly more deformation events that formed the Appalachian Orogen.

Heavy Metal Contamination of a Remediated Industrial Park versus a Historic Park

Benjamin Wrazen and **Sonya Bayba,** GES 529: Advanced Environmental Field Methods and Analysis
Faculty Mentor: Professor Elisa Bergslien, Earth Sciences and Science Education

Sites with a history of industrial activity can be highly contaminated and pose serious threats to public health. Areas surrounding electronic manufacturing plants may contain heavy metal and solvent contamination. Understanding the effectiveness of the remediation on these sites is imperative for ensuring that the risk to public and ecological health has been mitigated to acceptable levels. From the 1930s to the early 1980s Madison Wire Works manufactured wires at a plant located in West Seneca. After the site was abandoned, New York State Department of Environmental Conservation (NYS DEC) site investigations found that the site contained high levels of zinc, copper, lead, and chromium in the soil. Pickle liquor, an acidic metal solvent, was also found in site ditches resulting in polycyclic aromatic hydrocarbon contamination, and additional heavy metal contamination. Remediation occurred from 1992 to 1993 through collaborative efforts between the EPA and NYS DEC. Following clean-up, Tim Russert Park was then established and opened for public use. This study aims to answer the question: do remediated parks, with a history industrial activity, have higher levels of metals in the soil than historic parks? Due to Tim Russert Park's long history of industrial activity, we anticipate detecting one or more of these metals at levels exceeding NYS DEC Soil Cleanup Objectives (SCO) for restricted-residential use, especially on the site's peripheries. X-ray fluorescence spectroscopy (XRF) is used to analyze soil samples for heavy metal constituents. Heavy metal concentrations from Russert Park are compared to levels to levels at Delaware Park, a site with no history of industrial activity to provide baseline levels.

Investigation of Microfibers Along the Buffalo River through Water Samples

Amanda Mertowski, Geology
Faculty Mentor: Professor Elisa Bergslien, Earth Sciences and Science Education

Humans have had a large impact on the environment often in ways that as individuals we may not realize because they seem so small. One unnoticed impact that has recently been discovered is microfibers in our waterways. These are very small fibers that can be shed from clothing or other textiles. As we wash our clothes the fibers get released from the fabrics and enter into our wastewater which can be hard to detect or remove as it flows through our wastewater treatment plants. For a two month period, the goal of this research was to search for signs of microfibers in the Buffalo River and determine their distribution during and in the absence of precipitation events. The samples for this project were taken from various points in the river, including near wastewater runoff areas. Water samples were taken 4 meters deep into the water column using an 80 um plankton net. The samples were then processed through wet sieves and placed in petri dishes for microscopic examination. Scanning electron microscope photos were also taken of some of the microfibers. A total of 61 microfibers were found out of the 147 petri dish samples. After point counting the microfibers for each of the 4 days, the data shows that during a precipitation event there were more microfibers found at the mouth of the river where it enters Lake Erie. During a dry event, there were more microfibers found up the river where the Bailey Avenue Bridge crosses the Buffalo River. This data shows that there is a presence of microfibers in our waterways and that they are distributed throughout the river. A poster will be presented which includes all data and information.

Long-Term Vegetation History of the La Botica Archaeological Site, Colorado

Gregory Bream, GEG 430: Senior Thesis
Faculty Mentor: Professor Camille Holmgren, Geography and Planning

The La Botica Archaeological Site in Conejos County, Colorado has an extensive history of medicinal plant cultivation by residents of the San Luis Valley. Hispanic residents have used the site as a source of medicinal plants since the 18th century and Native Americans for possibly 8,000 years prior to that. Located in the southern Rocky Mountains, the site is situated within a Pinyon-Juniper woodland community dominated by Pinus edulis and Juniperus scopulorum. Knowing the vegetation history of the area through time would provide important insight into this culturally significant site. We expected that the vegetation would be fairly stable throughout the record given the relative climatic stability during the Holocene (last 10,000 years), although human use of the site may have led to changes in community composition and/or abundance. To test this, we collected a series of 16 packrat (Neotoma sp.) middens ranging in age from 4,780 to 140 cal yr B.P. and analyzed plant macrofossils to reconstruct the long-term vegetation history in the canyon. In total, we identified 62 macrofossil taxa in the middens. Macrofossils show pinyon-juniper woodland dominated the area throughout the record with little change in plant community composition. This suggests that long-term usage of the site may have been facilitated by a relatively stable climate and enduring presence of culturally relevant vegetation in the area.

Lyme Disease Diagnostics

Christine Prendergast, BIO 499
Faculty Mentor: Professor I. Martha Skerrett, Biology

Lyme Disease is rapidly growing in the United States, especially in the Northeast Region. It is caused by the bacterium Borrelia bagdorferi, which is transmitted to humans by the bite of an infected black-legged tick. The disease is typically diagnosed by physical findings (e.g., rash: erythema migrant), the possibility of exposure, and typical flu-like symptoms. Antibiotic treatment has been proven to successfully treat the disease if administered within a few weeks of infection. Unfortunately there are numerous concerns regarding potential misdiagnosis. The CDC recommends a two-tier serologic test for the diagnosis of Lyme Disease. There are a number of case studies summarizing misdiagnosis, positive diagnoses, and the often complex and lengthy steps involved in diagnosis. I will be presenting the findings of these case studies in conjunction with information about the diagnostic tests currently available and commonly used within the Lyme diagnosing process. The presentation will also comment on potential flaws in laboratory diagnostics as well as practitioners general understanding of lyme diagnostics.

Martian Mineralogy: An Extrapolated History of Liquid Surface Water

Kaitlin Cerrillo, Physics
Faculty Mentor: Professor Kevin Williams, Earth Sciences and Science Education

The purpose of this research is to investigate the geologic makeup of two fluvial systems on Mars and compare the types of minerals found in each location. This was performed by analyzing spectral data cubes taken from the publicly available libraries of the Compact Reconnaissance Imaging Spectrometer for Mars (CRISM) spectrometer onboard the Mars Reconnaissance Orbiter (MRO). Following that, an attempt to extrapolate the type of water that was once present in the regions, based upon the evidenced alteration of minerals, was made. This will hopefully provide further clues into the conditions present on Mars during its early development, and what type of liquid surface water was present in these locations, if any, and how these shaped the planet's development. Understanding the history of Mars, one of Earth's closest celestial neighbors, can have multiple scientific benefits, from increasing knowledge of early solar system development, to understanding the development of life and the conditions required here on Earth. Ideas about the Martian past are constantly developing as further scientific data is collected and analyzed. It is the goal of Martian studies to put together as complete a picture as possible of the development of Mars, including the evidence and impacts of liquid water on its surface.

Peptidomimetics That Contain Amino Acid Surrogates, Synthesized Using Buchwald-Hartwig Amination

Gregory O'Brien, Individualized Studies, **Mahmuda Rahman,** Chemistry, **Elifnur Yildiz,** Chemistry and **Victoire-Grace Karambizi,** Undecided
Faculty Mentor: Professor Sujit Suwal, Chemistry

Buchwald–Hartwig amination (BHA) is a palladium-catalyzed coupling of amines and aryl halides. Synthetic utility of BHA is primarily due to the shortcomings of other aromatic C–N bond formation methods, which often suffer from limited substrate scope and functional group tolerance. BHA is widely used in organic synthesis to create a variety of molecules that have medicinal and pharmaceutical essence. With this prospect, we explored the application of BHA towards restructuring several heterocyclic halides into highly functionalized amino acid surrogates that could fuel synthesis of novel peptidomimetics having better pharmaceutical indices. Most importantly, these building blocks allow us to design conformationally constrained oligomers that are cell-permeable, proteolytically stable, and potentially offer high-affinity protein ligands. To date, we have been successful in synthesizing more than a dozen amino acid surrogates. Currently, we are optimizing solid-phase syntheses of hybrid peptides/peptoids that contain surrogate amino acids. Also, we are exploring a MS-based sequencing method that can deconvolute subunits within the oligomers.

Resurrecting DNA, Recovering Plasmid DNA from Dead Bacteria

Jessica Benitez, BIO 590
Faculty Mentor: Professor Gregory Wadsworth, Biology

Bacterial plasmids are small, circular double-stranded DNA molecules that are physically separated from the chromosomal DNA. Natural plasmids have been engineered to be used as bacterial cloning vectors. Foreign genes can be inserted into a plasmid cloning vector. When the cell replicates the plasmid, it also replicates the "cloned gene." Researchers commonly maintain and store plasmids inside bacterial cells. However, these cells can die if they are improperly stored. Dead cells cannot repair or replicate DNA, which can lead to the subsequent degradation of the plasmid. This happened to a plasmid, MmCD00320612, which I was maintaining in bacterial cells at Buffalo State. My project is to recover the plasmid DNA from the dead cells and introduce it into living cells through bacterial transformation. To confirm the recovered plasmid is intact, the plasmid DNA will be isolated from the cells and its structure will be analyzed by restriction endonuclease/electrophoresis analysis. If successful, this would provide a simple protocol for "resurrecting" plasmid DNA from dead cells.

Rooting Depth Mediates Ecosystem Sensitivity to Rainfall

Unikue Gardner, BIO 495
Faculty Mentor: Professor Daniel Potts, Biology

Evapotranspiration (ET) is the movement of water from land to the atmosphere by soil evaporation and plant transpiration and so represents an important component of the global hydrologic cycle. Our objective was to measure the sensitivity of ET in response to variation in rainfall and ecosystem rooting depth along a global precipitation gradient using daily climate and ET data collected from a globally-distributed network of research sites. We adopted the Richard-Baker Flashiness Index from hydrology to quantify ecosystems' ability to translate precipitation into ET. In hydrology, streamflow flashiness quantifies the ability of a watershed to translate precipitation into runoff. By analogy, ET flashiness (ETf) describes the ability of an ecosystem to translate precipitation into ET. Finally, we compared annual precipitation, ET, and ETf at each site to estimates of ecosystem rooting depth drawn from the literature. We predicted that a decline in ETf associated with increasing annual rainfall would be mediated by rooting depth. By enabling plants to access deeper, less variable pools of soil moisture, we predicted that increasing rooting depth be associated with a decline in ETf. Along a global gradient of precipitation, annual ET increased with increasing annual precipitation. Consistent with our prediction, cross site comparisons revealed that increasing annual precipitation was associated with a decline in ETf. However, within site comparisons suggest that rooting depth mediates interannual variation in ETf in response to interannual variability in rainfall. Ecosystem hydrologic flashiness is easily calculated from widely available estimates of daily ET and thus provides an additional means to explore links between rainfall variability, plant communities, and hydrological cycling.

Study of Magnetic and Electrical Transport Properties of LuFe2O4

Brittany Willard, Physics
Faculty Mentor: Professor Ram Rai, Physics

LuFe2O4 (LFO for short) is a special class of rare-earth oxides which possesses interesting physical properties such as the ferrimagnetic states, magnetoresistance, and ferroelectric states. The ferrimagnetic and magnetoresistance properties of LFO have already been studied by other researchers, but these properties have not been completely understood. The ferroelectric properties of LFO were the least understood property, thus more extensive analysis was conducted on such property. These properties were studied systematically by using various techniques. The PPMS was used to study the ferrimagnetic state as well as the magnetoresistance of LFO with and without a magnetic field present from room temperature down to roughly 4 K (the temperature of liquid helium). The magnetic moment was measured as a function of temperature and magnetic field in order to understand the low temperature magnetic properties. An Inductance/Capacitance/Resistance meter was used to study the capacitance of LFO from room temperature (~300 K) down to 50 K to investigate the ferroelectric properties. The Premier Precision II meter was also used to study the ferroelectric properties from room temperature (~300 K) down to 50 K. We measured the ferrimagnetic transition temperature of LFO to be 240 K, the magnetoresistance effects up to 5%, and strong temperature dependent moment-field hysteresis loops. Surprisingly, our LFO samples did not show the ferroelectric properties.

Syntheses of Piperazine Derivatives Through Reductive Amination

Victoire-Grace Karambizi, Undecided, **Mahmuda Rahman,** Chemistry, **Elifnur Yildiz,** Chemistry, **Gregory O'Brien,** Individualized Studies and **Julianna Du Hart,** Physics
Faculty Mentor: Professor Sujit Suwal, Chemistry

Piperazine derivatives are widely used as a privileged scaffold in modern drug discovery. Piperazines are known to improve lipophilicity of small molecules, therefore they are selected as a primary chemical motif within complex molecular frameworks that are used for drug screening. Kinase inhibitors, CNS drugs, and Anthelmintic are a few drug classes where piperazine is present as an essential chemical moiety. In addition, they are also used in the syntheses of heterocyclic polymers. A synthetic approach that offers a variety of piperazine analogs is still in high demand. Importantly, piperazine derivatives that contain an amino acid side-chain would offer additional diversity that has high reward potential in diversity-oriented synthesis and combinatorial chemistry. To this point, we envisioned to synthesize piperazine derivatives, starting from reductive amination of amino acid esters, with protected glycine aldehyde, which would provide secondary amines. We hypothesize a deprotection of the t-boc group followed by an intramolecular cyclization and subsequent amide reduction would offer the optically pure mono-substituted piperazine derivatives. Using this approach, we have synthesized nearly a half-dozen piperazine derivatives with different amino acid side-chains.

Temporal Changes in the Morphology of the Buffalo RIver Resulting from Environmental Dredging

Jennifer Fornell, GES 433: Geology Independent Research
Faculty Mentor: Professor Jill Singer, Earth Sciences and Science Education

The Buffalo River is classified as a Great Lakes Area of Concern (AoC). This designation reflects the industrial legacy of the river that includes bottom sediments contaminated by heavy metals and organic compounds. Efforts to restore the Buffalo River and de-list it as an AoC requires the impairments to the river to be remedied and that in turn has led to a large scale environmental dredging project that took place between 2011 and 2015. This project resulted in the removal of >1 million cubic yards of contaminated sediment from the lower 9 km of the Buffalo River. In a collaborative effort with the Geology Department at Middlebury College, side scan sonar surveys were conducted prior to the start of the multi-year dredging effort (2005, 2009, and 2011) and annually thereafter (2012-2018). Doing this provides an opportunity to investigate the effects of the dredging project on the morphology of the river channel, and in particular the destruction and reformation of sedimentary structures. My project involved going to Middlebury College to process several years of side scan sonar data using a software program known as SonarWiz 7 (2016, 2017, and 2018) and reprocess some earlier records using SonarWiz6. Side scan sonar data were imported into the SonarWiz software and the imagery were reviewed with bottom tracking to remove false reflections and merge the two sides of the image. To improve the contrast making it easier to identify features, the color, gain, and intensity settings were adjusted. The images were then added to a Google basemap and exported as a geotiff file into Adobe photoshop to adjust the scale, I am now using the processed data in the form of digital and printed maps to reinterpret surveys conducted prior to 2016 and interpret the records from 2016 - 2018. I am noting the appearance and disappearance of bedforms and closely examining an area of the river known to have a large scale feature known as a sedimentary furrow. A field of furrows, first identified in the early 1990's, persisted until it was largely removed by dredging activities. Preliminary interpretation of the 2018 side scan sonar data suggests that a few furrows either survived and/or reformed in the years since that section of the river was dredged. In addition to documenting the changes in this section of the river, I also will be noting the effects of dredging and how it disturbs the river bottom. Using side scan sonar records collected following the end of the dredging project, I will observe how the dredged areas become progressively more subdued as sediment is redeposited smoothing out the bottom. My research offers an ideal opportunity to study temporal changes in the morphology of the Buffalo River before, during, and after the end of the environmental dredging project. My findings will advance our understanding of how the Buffalo River is adjusting to channel widening and deepening due to the removal of the contaminated sediment.

Towards the Creation of a Library of Foldamers Using Amino Acid Surrogates Synthesized by the Suzuki-Miyaura Reaction

Mahmuda Rahman, Chemistry, **Elifnur Yildiz,** Chemistry, **Victoire-Grace Karambizi,** Undecided and **Gregory O'Brien,** Individualized Studies
Faculty Mentor: Professor Sujit Suwal, Chemistry

The Suzuki-Miyaura cross-coupling is widely used for creating bi-aryl molecules. Cross-coupled products that contain a heterocyclic moiety with different substituents positioned around a benzene architecture are limited. However, heterocyclic moieties are indispensable fragments among FDA-approved drugs, such as Gleevec, Dasatinib, Erlotinib, etc. We, therefore, aimed to create Suzuki-coupled heterocyclic molecules that also contain N-protected amines and carboxylic acids, which can then be used to synthesize peptidomimetics. We hypothesize the presence of such a moiety would amplify the chances of obtaining "hit" molecules while screening against targeted biomolecules. To increase the molecular diversity, we used arenes that contained protected amines in the ortho-, meta-, or para-positions of the aryl boronic acid, so that diverse foldamers could be generated. With the presence of foldamers, we can manipulate the number of torsional degrees of freedom per pitch and potential energy surfaces within the oligomers while synthesizing libraries of compounds. Also, this allows us to tune the location and number of non-covalent interactions while avoiding energetically unfavorable conformations. Currently, we have successfully created half a dozen Suzuki cross-coupled molecules and are testing their compatibility in solid phase synthesis of peptidomimetics.

Psychology and Social Sciences

Adverse Childhood Experiences and Dietary Patterns

Nicolas Giorgianni, PSY 499
Faculty Mentor: Professor Naomi McKay, Psychology

Adverse childhood experiences (ACE) are best described as psychological, physical and sexual abuse that occur during the first 18 years of life. Studies have shown a correlation between ACE and several later in life health issues, including obesity. Although the relationship between ACE and obesity has been shown, little research concerning the role of dietary restraint has been explored. The current study aimed to test the hypothesis that there is a correlation between ACE scores and unhealthy dietary patterns. Participants were recruited from SUNY Buffalo State's Psychology department and were asked to complete an online Qualtrics survey. The survey included several questionnaires, including the Adverse Childhood Experience Questionnaire, the Barratt Impulsivity Scale, the Three Factor Eating Questionnaire, the Eating Attitudes Test-26, and a Food Frequency Questionnaire. Data is currently being compiled, but it can be hypothesized that there will be a positive correlation between ACE scores and unhealthy dietary patterns. As little research has been conducted in this area, the current study has potential to lead future research to investigate the psychological, or possibly, physiological mechanism that causes victims of childhood negligence to gain weight and become obese.

Big Pharmaceutical's Role in the Opioid Epidemic

Joseph Vallone, HON 400: All College Honors Colloquium
Faculty Mentor: Professor Michael MacLean, Psychology

The purpose of my study is to analyze the role big pharmaceutical companies play in the opioid epidemic that has plagued our country in recent years. According to a study from the National Safety Council, Americans nowadays are more likely to die from an opioid overdose than from a car crash, a fall, drowning, or choking on food. Strong direct marketing from pharmaceutical companies to doctors fuel this ongoing opioid abuse epidemic. Although heroin and fentanyl are involved more commonly in overdoses, prescription opioids are involved in one-third of all opioid overdose deaths. Many people start using prescribed opioids before escalating their use to other types of opioids such as heroin and fentanyl. Doctors are also to blame for prescribing opioids so frequently. Dangerous and deadly opioids are being prescribed at very high and unsafe rates. Doctors prescribe opioids so much because they too often have believed the lies big pharmaceutical companies sell to them that opioids are less addicting and less deadly than they really are. Although there are multiple causal factors involved in the epidemic, I will focus on the role big pharmaceutical companies play in my poster. I will examine research that shows the detrimental effect big pharmaceutical companies have on the high opioid prescription rates, addiction rates, and overdose rates.

Ceramics of Old Fort Niagara, Youngstown, NY

Melanie Manzella, Anthropology
Faculty Mentor: Professor Susan Maguire, Anthropology

My research focused on ceramics recovered during the 2017 Buffalo State Archaeological Field School at Old Fort Niagara, Youngstown, NY. Old Fort Niagara is a New York State Historic Site and National Historic Landmark recognized for its role as a military base for the French, British, and American armies during the 18th and 19th centuries. The 2017 excavations focused on the location of a Revolutionary War barracks occupied by British soldiers. For this study, I cataloged all the ceramic artifacts recovered from the excavations. A total of 555 ceramic sherds were identified. The ceramic type, decoration, and weight were recorded for each artifact. The types were then summarized by level for each test unit. Ceramic types are an important diagnostic tool for dating archaeological stratigraphy. Additionally, the cost and form of ceramic vessels can reveal patterns of consumer choice among the soldiers at Fort Niagara. This poster will present the summary data for the ceramic artifacts from the fort and will examine changing patterns of ceramic use over time at Fort Niagara.

Children's Rights: Can Women Make a Difference?

Lindsey Chapple, PSC 470: Senior Seminar
Faculty Mentors: Professor Patrick McGovern, Political Science and Professor Mehwish Sarwari, Political Science

The study of women in politics has become a growing topic of interest in political science research of late. Current studies on women in politics have focused on corruption, women's rights, education, and marginalization. There is, however, a gap in the literature focusing on women and children's rights. Using regression and logit models with data collected from 110 states from 2000 to 2015, this study explores the impact of female heads of state and women in legislatures on enhancing children's rights. Children's rights, in this case, will focus on three main areas: education, employment protection, and underage marriage. Female politicians are often focused on women and family policies and are more likely to enact legislation and enforce policies that protect children from abuse. This study tests the correlation of female heads of state compared to male heads of state in reducing the abuse of children rights. The study also

tests the correlation of the percentage of women in legislatures in reducing the abuse of children's rights. Finally, this study assesses the interaction between female head of state and regime types, along with percentage of women in parliament and regime type on children's rights abuses. Results suggest that the presence of women in national legislatures has the greatest impact among these variables in protecting children.

Conflict, Poverty, and Power: Economic Development in Sub-Saharan Africa

Bridget Kyei, HON 400: All College Honors Colloquium & PSC 470: Senior Seminar
Faculty Mentors: Professor Patrick McGovern, Political Science and Professor Andrea Guiati, Modern and Classical Languages

This paper focuses on the effects of "good governance" and the level of "human development" on economic developments in Sub-Saharan African countries. Many theorists concerned with Africa argue that the most influential determinate of economic growth in a nation is governance. According to their research data, the power of government to control economic institutions and behaviors ultimately determines the overall economic health and well-being of a nation; i.e., national politics allow economies to grow or decline. "Good governance," according to these theorists, has a positive impact on per capita growth. To measure good governance, this paper uses data from Transparency International, focusing on varying levels of political corruption within a given set of Sub-Saharan countries. This paper also utilizes findings from the World Bank, the UN, and original survey data regarding education, life expectancy and levels of healthcare—all measurements that have seen declines concomitant with the economic decline of many Sub-Saharan economies. The author expects to find that political corruption ultimately has the greatest impact upon declining GDPs in Sub-Saharan Africa, when compared with these other variables.

The Curse of Wealth: Unearthing the Relationship Between Natural Resources & Sexual Violence

Jennifer Briones, PSC 470: Senior Seminar
Faculty Mentors: Professor Patrick McGovern, Political Science and Professor Mehwish Sarwari, Political Science

It is a common misconception that sexual violence occurs whenever civil conflict occurs. Yet, there are several causal mechanisms that tend to be associated with the atrocities committed throughout war. Natural resources, such as oil, natural gas, coal, and timber, may be underlying mechanisms as to why civilians get brutalized for living in areas deemed resource "wealthy." This research examines the relationship between natural resources and sexual violence during conflict, as this is a vastly understudied field, lacking literature that explores the possible connections between natural resources and sexual violence. This paper argues that there is less sexual violence in countries experiencing civil conflict that have a bounty of natural resources, as there is more incentive on the part of combatants to rely on civilians for access to these resources. This "disincentivizes" brutality toward civilians. To unearth a potential relationship between these variables, the Democratic Republic of Congo, Iraq, and Burundi are discussed, as they hold vast natural resources and have faced civil conflict involving sexual violence. Quantitative analysis is employed in a multi-method approach through the use of the Sexual Violence in Armed Conflict (SVAC) dataset and World Bank data, covering the decades between 1989-2009. Though statistically significant, the results do not support the papers stated hypothesis, suggesting the need for further research; research that, for example, might utilize geographic referencing to pinpoint natural resources within a conflict country and their proximity to areas of the greatest political violence.

Depicting History Using Dental Remains

Viviana Ruiz, ANT 495
Faculty Mentor: Professor Susan Maguire, Anthropology

This study examines faunal remains from the 2017 Buffalo State College Archaeological Field School at Old Fort Niagara, Youngstown, NY. The excavations focused on a British soldiers' barracks from the American Revolutionary War period. This study focuses on the species identification of dental remains included in the faunal assemblage. To begin this study, we first catalogued all the artifacts recovered from the excavations, sorting all the faunal remains into one category. All the dental remains present in the assemblage were then selected for analysis. The Anthropology Department Faunal Type Collection along with Manuals for faunal analysis were used to identify the species for each tooth. Identifications were also made in consultation with Dr. Thomas White, Biology, SUNY Buffalo State. Additionally, size, weight, and tooth type were recorded for each tooth. A total of 64 teeth were examined and 6 species were identified in the collection. This preliminary analysis provides insight into the species present at Old Fort Niagara during the historic time period and sheds light on the diets of individuals during this time.

Differences in Response to a Laboratory Stressor Between the Sexes

Isabelle Sequeira, Psychology and **Emmitt Horvatits,** Psychology
Faculty Mentor: Professor Naomi McKay, Psychology

Elevated stress levels increase energy intake. When macronutrients are examined, people under stress increase consumption of food items that are high in fats and carbohydrates. Previous literature has also implied that research regarding the differing stress systems between the sexes is

valuable, yet it seems none have looked into the speed at which they recover from stress after eating unhealthy foods. This study will provide evidence on whether stress recovery is differentiable between males and females when consuming unhealthy foods. It is hypothesized that females will recover from stress faster than males. To measure this, two experiments were run. In experiment one, both male and female participants came in and had their baseline anxiety rated. Afterwards they were given a food condition (twix, carrots, or no food) and then anxiety measures were taken again. Experiment two was the same as the first except before the food condition, participants were put through a laboratory stressor and then additional anxiety and cortisol measures were taken over time after the condition to study the decline of stress. In experiment one, females had significantly more anxiety than males after the condition was received ($p=.045$). Results from experiment two are pending but are expected to reflect a similar outcome. Based off the results of the preliminary data, it can be concluded that there are stress differences in males and females.

Digital Devices Negatively Affecting Attention in College Classrooms

Nia Peeples, Justin Rincon, Cameron Otiti and **Josiah Bonsu,** CWP 102: Argumentation and Research
Faculty Mentors: Professor Susan Mary Paige, New Student Academic Programs and Professor Jane Sullivan, Writing Program

Our research focus is on the detrimental effects of extended screen time, on a phone or laptop, on cognitive performance of first-year college students at a four-year urban campus. In our research we discovered smartphone addiction is associated with anxiety, depression, substandard sleep quality, and poor communication skills, which affect academic achievement. Specifically, we will investigate the relationship between poor academic performance and smartphone use. Students are socially dependent on their devices and refuse to put them away causing a lack of attention in the classroom. In addition, students need to study in the best environment to ensure maximum benefit to their academic performance. Do smartphones in the classroom taint this environment? We hypothesize that using your phone in a classroom setting negatively affects student attention and performance. With prior IRB approval, we will randomly select students and use smartphone applications to find the if there is a correlation between screen time usage in class and grade point average both at midterm and end of the semester.

Discovering Causal Mechanisms in the Understanding of Lone Wolf Terrorism

Ashley Szurlej, HON 400: All College Honors Colloquium
Faculty Mentor: Distinguished Professor Andrea Guiati, Modern and Classical Languages

A lone wolf is described as someone who operates on their own and is not part of a group, or directed by an outside network. The lone wolf threat is hardly new. Islamist groups, right-wing white supremacists, abortion foes, and separatists of various stripes have all used this tactic with varying degrees of success. Lone actors, however, seem to be growing in number each year since 2000. With regard to attacks on US soil, this study focuses on why lone actors are growing in numbers, and their motives for committing acts of lone wolf terrorism. Through existing research and individual case studies, similarities in ideological motivations and radicalization between lone actors are examined. We can study previous cases to compare and see similarities that can potentially prevent these lone wolves from acting in the future. These similarities represent the causal mechanisms in becoming a lone wolf terrorist. Despite the similarities, ideological extremism seems to be the key component in the causal pathway of an individual committing a violent act. The intended causal mechanisms include the influence of terrorist group ideologies, gaining attention, and to give meaning to an individual's life. Given their sophistication and lethality, lone-wolf terrorists represent a serious threat to the United States. The purpose of this study is to increase awareness of this growing threat and by determining the causal pathway of lone-wolf actors, crime reduction strategies can be implemented. The intended audience for this research could include anyone in the general public of the United States as these cases continue to affect everyone. Besides the general population, all federal investigative services would also be interested in this research to study how the lone wolves work and prevent any future attacks by these people.

The Effect of Mental Health Spending and Firearms Access on School Shootings

Brittany Depczynski, PSC 470: Senior Seminar
Faculty Mentor: Professor Patrick McGovern, Political Science

This paper explores several factors that influence the number of school shootings here in the US. It argues that individual state mental health expenditures, state background check policies, and firearms laws affect the number of school shootings. These variables are tested to see if they have a significant relationship with the dependent variable [school shootings per enrollment.] The dependent variable is created by taking the number of students enrolled in school in each US state and then dividing that number by the state's population. Four hypotheses are tested here: (1) states that spend more on mental health will

have less school shootings per capita; (2) states that require strict and enforceable background checks before gun purchases will have less school shootings; (3) states that allow concealed carry on school campuses see an increase in school shootings; and (4) states that have a higher number of citizens lacking health insurance will have an increased number of school shootings. Linear regression models are employed to measure the relationships between these variables. Expected results should be both statistically significant and support these hypotheses.

The Effect of Self-Regulation Depletion on Social Anxiety

Javeona Kirby, Fashion and Textile Technology
and **Hannah Brown,** Psychology
Faculty Mentor: Professor Kimberly Kamper-DeMarco, Psychology

For the current study, social anxiety in relation to ego-depletion and self-regulation will be investigated in a sample of emerging adults (ages 18-26). It is hypothesized that when a task is performed that causes ego-depletion, the ability to self-regulate decreases, causing social anxiety levels to increase. Self-regulation encompasses the ability to set goals, self-monitoring, self-evaluation, and self-reinforcement. Previous research suggests that self-regulation depletion may lead to increased social anxiety due to an inability to control one's emotions and/or behaviors. When an individual is unable to regulate their emotions or behaviors, which may include setting goals, they may not reach these goals, creating the belief that they will not succeed, thus beginning the cycle of anxiety in which they fear possible failure in the future. The inability to regulate emotions such as fear or sadness can cause an individual to act inappropriately in social situations which can lead to avoidant behavior in order to prevent the same experience from reoccurring. These behaviors can ultimately hinder opportunities later in life. Self-regulation is important because our emotions are part of what leads to our behaviors. The behaviors we develop can be used in the social situations that we will engage in through our lifetime.

The Effect of Social Media on Adolescent Self Perception

Hannah Brown, Psychology and **Javeona Kirby,** Fashion and Textile Technology
Faculty Mentors: Professor Kimberly Kamper-DeMarco, Psychology and Professor Jennifer Livingston, University at Buffalo, School of Nursing

Social media shows the best parts of people's lives, and in a time where "social media influencers" are treated like celebrities, it is important to know how the time spent browsing social media sites affects one's self-perception. Using the Harter Self-Perception Profile, we will look at the effect that social media has on how adolescents view themselves. A social media questionnaire, which has been adapted from a well-validated victimization questionnaire, assessed frequency, time spent, friends, posts, and type of social media site (e.g., Facebook, Instagram, Twitter, etc.). Previous findings suggest that more investment in social media, and more time invested results in lower self-esteem and a more depressed mood. Other studies have found that self-comparison on social media sites also results in higher depressed mood. Additionally, females with accounts on social media sites have reported lower self esteem than those who did not. Based on the previous findings, we would expect to find a negative correlation between self-perception and the time spent using social media, particularly for females.

An Examination of Reshoring Activities in the United States: A Case Study from Western New York

John Quinane, Social Studies Education
Faculty Mentor: Professor Vida Vanchan, Geography and Planning

This study seeks to examine reshoring activities in the United States by providing a conceptual understanding of what reshoring is and a case study analysis of firms' reshoring activities in Western New York. Reshoring needs to be conceptualized by drawing upon and combining approaches developed in a Global Production Network (GPN) with micro-approaches to understanding firms including the development of a geography of production tasks. Data for this study come from a survey and interviews of firms located in the Western New York region. Results will be reported including a comparison between the local and national geography of reshoring where the reshoring reflects alterations in the differentials that exist between localities that were initially responsible for the offshoring decision. On one hand, a task is reshored back to the US, and on the other hand, it is reshored to a particular state and locality within that state.

First Year College Students' Knowledge of the Current Political Situation in Syria.

Nicholas Lattuca, Radjmin Smith and **Zakaria Shaibi,** CWP 102: Argumentation and Research
Faculty Mentors: Professor Susan Mary Paige, New Student Academic Programs and Professor Jane Sullivan, Writing Program

The next generation of voters for the 2020 Presidential election includes first-year college students in the Class of 2022. Knowledge about current domestic and foreign issues, as well as the stance of the candidates on these issues, is the foundation of an educated electorate. Research indicates that this demographic is somewhat ambivalent about current political realities and in particular about foreign policy. One of the issues presidential candidates will debate, on a bipartisan basis, is the withdrawal

of the United States military from Syria. We will use this political issue, about the current political situation in Syria, to assess the knowledge of first-year college students as one of the many measures of their preparedness as future voters in the 2020 election. With prior IRB approval, data will be collected via questionnaires completed by first-year college students on an urban public college campus. Participant selection will be done randomly in the student union and residence halls.

Forgiveness Leads to Happiness: Lessons from Rwanda

Sean Murphy, Childhood Education
Faculty Mentor: Professor Julie Henry, Elementary Education, Literacy and Educational Leadership

This project was based on my experiences traveling to Rwanda with Professor Drew Kahn as part of the Anne Frank Project. The trip was designed to be a "heart-stretching experience" with challenging conversations about human rights, social justice, and the power of stories. This summer's research project provided me with the opportunity to conduct additional research about the reconciliation process I experienced first-hand in Rwanda. The goal of the project was to learn about how the people of Rwanda were able to rebuild their country after the 1994 Genocide against the Tutsi killed 800,000 people in 100 days and to educate others about Rwanda and how reconciliation has transformed this nation in the years since then. I read books written by Rwandans and found that one leader, Paul Kagame (Vice President, and then President) led the country in a commitment to moving forward in forgiveness and reconciliation after the genocide. Specific mechanisms in Rwanda allow those who participated in the genocide to help rebuild the country rather than being kept separate in prison. The reconciliation process also includes monthly opportunities for all of Rwanda to come together and help rebuild. This research project combined focused readings with my first-hand experience in Rwanda to examine how the people of Rwanda were able to rebuild their country after the horrors of 1994. My presentation is meant to educate others about Rwanda, and to share how reconciliation has transformed this nation and served as a model of forgiveness and reconciliation in my own life.

Girls Generation: An Analysis of Gender Roles and Human Rights Abuses in the Korean Pop Industry

Jesse Orrange, Anthropology
Faculty Mentors: Professor Kimberly Hart, Anthropology and Professor Michael Johnson, Modern and Classical Languages

For my thesis, I plan to analyze the Korean pop music industry. I will do a general study of the industry, including the trainee system, the companies behind the music, and the fan culture. But the focus of this paper will be dedicated to studying the roles that gender play in the modern KPop scene, as well as potential human rights abuses that pop idols face due to pressure from companies and fans. I will include this background general information on the industry to serve as an introduction to readers who may be unfamiliar with the KPop scene. I will be analyzing the differences in performance duties for male and female idols, the differences in fan culture for male and female fans, and the types of scrutiny that male idols versus female idols face from fans, such as standards of whether the idol is allowed to date or how much skin they can show, with excerpts from various academic journals who have studied the industry. Additionally, I will consult YouTube videos from two young Korean American women involved in the industry who will discuss gender roles and human rights abuses, such as verbal abuse from managers and extreme dieting, which contribute to the toxicity of the KPop industry. I plan to combine my previous studies in cultural anthropology and my background in gender studies to create a unique thesis that analyzes how culture, economics, gender roles, and fan culture combine to create the unique KPop industry.

Going Gold: Personality of Girl Scout Gold Award Recipients

Jill Meyer, PSY 498: Honors Thesis II
Faculty Mentor: Professor Jill Norvilitis, Psychology

The Girl Scout Gold Award is the highest service achievement a scout can earn and requires the completion of prerequisite badges and an independent service project of at least 80 hours. Past research suggests a link between certain personality traits (e.g., openness and agreeableness) and volunteers, but limitations, such as a volunteering requirement by participants' schools, restrict the findings from applying to people who volunteer because of their desire to help. A limited amount of research has focused on Boy Scouts and their characteristics and interests, but even less research has been dedicated to examining Girl Scouts. The present study will examine whether behaviors and personality traits identified in previous research on volunteerism and pro-social behaviors are found among Girl Scout Gold Award recipients. This study examines differences in the personality traits of achievement-striving, altruism, creativity, leadership, and social responsibility between Girl Scout Gold Award recipients and scouts who did not earn their Gold Award, as well as scouts who dropped out of Girl Scouts before high school graduation. The hypothesis being tested predicts these traits will be higher among Girl Scout Gold Award recipients. Members of the scouting community are currently being recruited for the study. An ANCOVA will be conducted in order to analyze the data. Significant findings will provide valuable information that could be used to encourage more scouts to strive for their Gold Award. Data collection is in progress and results will be presented at the conference.

How is Information from Hand Gestures Perceived and Interpreted?

Kyle Goodwin, Psychology
Faculty Mentor: Professor Stephani Foraker, Psychology

Speech and gesture are coordinated during everyday interactions and this seems to happen for all languages throughout the world (Abner, Cooperrider, & Goldin-Meadow, 2015). Interestingly, though, an addressee's eye fixations are on the speaker's face 95% of the time, and very rarely on hand gestures (Gullberg & Kita, 2009). Given the importance of gestured information for understanding and communication, my research focused on how that gestured information is perceived or picked up in the first place, particularly do we pick up information in hand gestures peripherally? To study this question, an eye tracking experiment was developed that shows a speaker briefly describing a situation coupled with gesture. After each video the participant is asked a spoken question about the discourse they just heard. Participants will see videos with gestures fully viewable, gestures blurred but the face area intact, or gestures greyed out completely and face area intact. I predict that participants will still fixate primarily on the face during all conditions as suggested by Gullberg and Kita (2009). Critically, I predict that during the full view condition participants will be able to answer the discourse questions correctly at a rate higher than chance but as stimuli become more obfuscated the participants' accuracy will go down. This pattern would support my main hypothesis that gestured information is perceived peripherally.

The Howard D. Beach Archives Collection

Kaylee Cassidy, MST 425: Museum Preservation and Practices
Faculty Mentor: Professor Noelle Wiedemer, History and Social Studies Education

The purpose of this research is an overall assessment of the methods, uses, and importance of archival material associated with a collection of 57,000 glass plate negatives in the Howard D. Beach Photography Studio collection. Donated to the Buffalo History Museum by the Giallombardo family, the collection includes 10 bankers boxes filled with personal and business correspondence as well as ledgers, bills, statements, and receipts that give insight into the daily life of Howard Dwight Beach (1867-1954), renowned Buffalo photographer. The collection was found in Beach's former studio at 469 Virginia Street and varies in physical condition. Standard operating procedures were drafted, as well as a processing plan and a finding aid with the help of other undergraduate students in the Buffalo State Museum Studies minor program in the Fall of 2018. The organization of the archives began first by physically sorting through the bankers boxes and strategically assessing their contents, which are then chronologically organized by year and placed into acid-free folders in special archival boxes to stabilize their condition. Records of the physical documents are kept in Excel spreadsheets. Working mainly with the personal and professional correspondences of Howard D. Beach, I have determined the process people went through when ordering prints of the glass negatives, as well as the hardships that he endured from a business standpoint during the Great Depression in the 1930s.

The Impact of Celebrity Endorsement upon Political Campaigns

Jessica Pontrello, PSC 470: Senior Seminar
Faculty Mentor: Professor Patrick McGovern, Political Science

A central concern of American political scientists continues to be national elections. A growing field of study within American politics is that of celebrity influence. A beloved celebrity's opinion may influence the success or failure of a political campaign. This paper tests the impact of celebrity on national elections through the use of data measuring increases or decreases in support of a candidate following celebrity endorsement. Other variables considered include media coverage of national campaigns, voter age and gender, along with other key voter demographics. The 2016 US presidential election will act as a test case for the impact of celebrity. This paper expects to demonstrate that the influence of well-known celebrities can impart upon a national campaign may have significant impact upon an election's results.

Impulsivity and Gender

Kayla Donnelly, PSY 499
Faculty Mentor: Professor Michael MacLean, Psychology

Impulsivity is a personality trait that is included in the diagnostic criteria for 18 disorders in the DSM 5. Despite being such a prevalent symptom, there remains much confusion surrounding conceptualizing and measuring impulsivity. Currently, the most common measure of impulsivity is the Urgency, Premeditation, Perseverance, Sensation Seeking, Positive Urgency, Impulsive Behavior Scale (UPPS), a questionnaire that includes five facets (sensation seeking, lack of premeditation, lack of perseverance, negative urgency, and positive urgency). Confusion surrounding the concepts and terms in this area of research along with mixed results regarding the validity of the UPPS indicates the need for a new measure. It may be that impulsivity is a more complex process that is not well-captured by measures such as the UPPS. A new measure of impulsivity developed for the current study goes deeper in assessing the process through which individuals decide to engage in the impulsive behavior. Along with the five facets, the new measure also captures other aspects of impulsivity including too little evaluation of consequences, failure to inhibit known problematic impulses, and inaccurate forecast of consequences. In this study

we will analyze data to be collected online from Buffalo State College students. We will be analyzing the reliability and validity of a new measure of impulsivity as compared to the previous measure, the UPPS. We will also be analyzing the relationships between impulsivity and gender utilizing the new measure. We predict that men will score higher than women across all facets of impulsivity.

The Influence of Learned Helplessness and Mastery Orientation on Performance Outcomes

Taylor Mical, Psychology & Criminal Justice
Faculty Mentor: Professor Dwight Hennessy, Psychology

Learned helpless is the concept in psychology where an individual who experiences repeated failure will allow that pattern to impact their thoughts, feelings and future actions. Over time these individuals can learn to be helpless. In the present study, research is being done to understand how learned helplessness (and an opposite process called Mastery Orientation) changes performance outcomes. The method is to have some participants engage in difficult visual spatial tasks and some engage in easy visual spatial tasks to see if learned helplessness and mastery orientation impact performance. When a participant has trait learned helplessness and experiences failure with a task, the chances of failure in the future when doing similar tasks increases because they tend to give up more quickly. However, individuals with a mastery orientation tend to work harder when faced with difficult tasks in order to succeed in the future. This research is ongoing and is funded as part of the Early Undergraduate Research Opportunities (EURO) program.

The Interaction Between Depression and Race on Stress-Induced Cortisol Release

Addie Longmire and **Vanessa Schieble,** PSY 498: Honors Thesis II
Faculty Mentor: Professor Naomi McKay, Psychology

Previous literature has shown that minorities, more specifically Blacks and Latinx, have a lower lifetime risk of depression than Whites. Moreover, studies have found that Blacks and Latinx have lower and more blunted cortisol slopes throughout the day than Whites. Studies have also found that salivary cortisol secretions are different in depressed individuals upon awakening and throughout the day than in non-diagnosed controls. This study assessed stress-induced cortisol release between White, Black, and Latinx individuals with high or low depressive symptomatology. A total of 25 White, Black, and Latinx participants underwent a stressor known as the Cold Pressure Test (CPT) where participants submerged their non-dominant hand into a bowl of ice water at 0°C for 2 min in front of a video camera. Participants then underwent a 25 min recovery period. Measures of stress were taken throughout the experiment via self-report, blood pressure/heart rate, and salivary cortisol. There was a main effect of race, with those in the minority group showing blunted cortisol after a laboratory stressor, but there was no effect of depression symptomatology on cortisol release.

Is the Use of Unsolvable Anagrams or the Sing-A-Song Stress Test a Reliable Way to Elevate Stress?

Addie Longmire, Psychology and **Isabelle Sequeira,** Psychology
Faculty Mentor: Professor Naomi McKay, Psychology

Studies that want to cause laboratory induced stress often use the psychosocial stressor known as the Trier Social Stress Test (TSST). The TSST reliably elevates self-rated and physiological measures of stress; however, it requires a large amount of man power to run each visit. During the TSST a participant is asked to undergo a mock job interview in front of a panel of three judges. Therefore, between the research assistant who runs the visit, the participant, and the judges, there are five individual schedules that must be coordinated. Several laboratories have used other methods, such as unsolvable anagrams or a modified version of the TSST known as the Sing-a-Song Stress Test. There are, however, no studies that have directly compared whether these two alternative techniques activate the stress response to the same extent as the TSST. The current study investigated whether unsolvable anagrams or the Sing-a-Song Stress Test elevated state anxiety and physiological measures of stress to the same extent as the TSST. As such, participants (n=27) were put into one of three stressor conditions: Unsolvable Anagram Task, Sing-a-Song Stress Test, or TSST and had self-rated state anxiety, salivary cortisol, heart rate, and systolic and diastolic blood pressure measured throughout the experiment. The results showed that systolic blood pressure was significantly higher in the TSST condition compared to the Anagram and SSST conditions ($F(6, 72) = 129$, $p = .02$). There was a main effect of time on heart rate, with an elevation in heart rate in all conditions immediately after the stressor ($F(3, 72) = 414$, $p = .01$). There was no significant effect of condition on self-rated anxiety, salivary cortisol, or diastolic blood pressure. These mixed findings do not support the hypothesis that both the SSST and Anagram Task will induce the stress response to the same extent as the TSST.

Is Trouble Brewing?: The Relationship Between Caffeine Intake and Criminal Behavior

Aishwarya Patwardhan, Psychology, **BrittanyAnn Monahan,** Psychology and **Isabelle Sequeira,** Psychology
Faculty Mentor: Professor Naomi McKay, Psychology

Approximately 85% of Americans consume at least one caffeinated product like coffee,caffeinated soft drinks, chocolate, or Excedrin everyday. It has been observed that consuming caffeine can cause detrimental effects on human behavior. Previous research suggests a positive correlation between caffeine intake and sensation-seeking behaviors, as well as caffeine intake and aggression. To the best of our knowledge there is no research on the association between caffeine intake and criminal behavior studied in conjunction with sensation-seeking and aggression. This study explored the relationship between caffeine intake and antisocial behaviors as a measure of criminal activities. It was hypothesized that caffeine intake would have a positive correlation with antisocial behavior. Data was collected through a self-report Qualtrics survey. The participants in this study were undergraduate students at SUNY Buffalo State College and participants from the Psychology department were offered extra credit on completion of the survey. An email was sent out with a link to the survey that comprised five questionnaires: a demographics questionnaire, measures of caffeine intake, aggression, sensation-seeking, and antisocial behavior (as a measure of criminal behavior). The results suggest that individuals who consume elevated levels of caffeine are likely to engage in criminal behaviors. The indication that caffeine is correlated with criminal behavior poses an array of further questions regarding whether this relationship is causal, which type of criminal behavior is most related to caffeine intake, and the variation of susceptibility between different populations.

Jealousy in College Students

Lillian Barksdale, Jessica Cherman, Kaitlin Holtz, Stacey McClinsey and **Angelo Viscuso,** PSY 488: Psychology Internship
Faculty Mentor: Professor Howard Reid, Psychology

There is evidence for gender differences in what causes the most jealousy, with men being most jealous with the sexual infidelity of their partner and women being most jealous with the emotional infidelity of their partner. This has been interpreted as support for an Evolutionary Psychology viewpoint since men cannot be sure of the paternity of offspring and thus are most concerned with the sexual infidelity of their partner, while women do not have to worry about the maternity of their children and thus are most concerned about maintaining the support of their significant other in raising the children. Only a few studies have examined individual differences associated with the causes of jealousy. Thus, why some men and some women respond in a manner not expected for their gender has not been a focus of research. In addition, there has been surprisingly little interest in whether the type of relationship the person is actually in affects their jealousy. The current study is designed to examine three questions: First, can we identify personality measures that account for the within gender variability seen in responses to infidelity? Second, is there a difference in response to infidelity depending upon whether a person is in a long-term relationship versus a relationship that is just starting? And third, is there a difference in response to infidelity if both people expect the relationship to only be for a short-term?

Market Liberalization in the Airline Industry: Positive Effects of Foreign Competition

Eugene Brown, PSC 470: Senior Seminar
Faculty Mentor: Professor Patrick McGovern, Political Science

This research project utilizes publicly available statistics from the United States Department of Transportation and United States Bureau of Transportation Statistics to determine the effect of foreign competition on domestic carriers that operate international routes for the commercial passenger air carrier services market. There have been recent debates on the issue of market liberalization through the use of "open skies" agreements and the impact of market oversaturation by foreign air carriers, such as Gulf based air carriers. The passenger air carrier service market, historically, has been one of the most heavily regulated industries in the United States. The data was statistically analyzed by use of a zero-inflated negative binomial regression model with multiple factors such as the frequency of flights, number of destinations, and number of carriers in a market. Each market was defined by a particular airport and analyzed over a five year period. This analysis seeks to understand the positive relationship of foreign air carriers competing against domestic air carriers through these multiple factors. The analysis also utilizes financial data to couple the economic effects of increased supply within the marketplace as an interactive variable. Foreign competition is theorized to decrease prices through increased supply of flights and destinations by foreign air carriers, which thereby increase passenger traffic on domestic air carriers that fly international routes. As the number of foreign air carriers increases in a particular market, the number of total passenger enplanements on domestic air carriers should increase. Foreign air carriers are determined to have a positive effect on the total number of passenger enplanements on domestic air carriers. This research demonstrates the positive impact of "open skies" agreements on domestic markets and argues for their continued supports implementation.

The Misuse of Adderall and Other ADHD Stimulants in College Students

Larry Durski, Kaylee Edwards, McKenzie Locker and **Hannah Parkes,** CWP 102: Argumentation and Research
Faculty Mentor: Professor Jane Sullivan, Writing Program

Adderall and other ADHD stimulants, such as Ritalin, have seen increased abuse in the urban college campus setting. There is a false belief behind using these stimulants for uses other than prescribed, such as that they can increase academic performance; however, this is not scientifically proven. Through a method of literature review and anonymous survey with four-year college students, after prior IRB approval, we will attempt to discover the extent of the misuse of such stimulants among first-year college students and the lack of awareness of the negative effects associated with their consistent use. We will also study the correlation between the use of illegal stimulants and academic success in both the long-term and short-term by surveying the students to see how much stimulant is used, when it is used, the frequency of the use and the students' grade point averages at mid-term and end of the semester of both semesters in their first year of school.

No Affect on mu-Opioid Receptors; Implications on Addiction, Exercise

Olivia Geary, John Hamilton, Sabrina Swenson and **Dr. Peter Thanos,** PSY 472: Psychology Seminar
Faculty Mentor: Professor Pamela Schuetze, Psychology

Exercise produces effective results when it comes to treating and preventing substance abuse. However, the mechanisms of action surrounding the therapeutic potential of exercise is still not clear. One potential system where exercise may be acting is the mu-opioid (MOR) system, which is involved in pain, reward, and addictive behaviors. Male and female Lewis rats were used to examine exercise-induced changes in MOR receptor expression in the rat brains. Rats were split into two groups, the exercise and sedentary groups at 8 weeks old. For the exercise group, rats ran on a treadmill at 10 mmin -1, 5 days a week, for 6 weeks while sedentary rats stayed in their assigned cages. After 6 weeks of treatment, the rats were sacrificed and their brains were used for in vitro [3H] DAMGO autoradiography to look at MOR expression. Exercise treatment had no effect on DAMGO binding in either male or female rat brains. Sedentary males showed higher DAMGO binding compared to sedentary females in the globus pallidus. These findings indicate that the MOR system may not be impacted by exercise in helping treat or preventing substance abuse. However, it is also possible that a more rigorous exercise regimen or longer exercise plans are needed to change MOR expression. Further studies will be needed to help answer these questions.

Normal Infant Development

Brianna Bailey, PSY 495: Infant Demonstrations
Faculty Mentor: Professor Pamela Schuetze, Psychology

This project describes and explains the normal development of an infant from birth to 36 months of age. Existing cell phone video footage and pictures of one subject is being used to demonstrate different domains of infant development, such as physical, cognitive, language and social/emotional development. I am conducting a literature review on those domains of development and thoroughly analyzing the videos and pictures. Useful cell phone data and information from the literature is being used to make PowerPoint presentations and demonstration videos designed to demonstrate normative development to students taking child development courses. This poster will describe the process used to develop these materials and will showcase select versions of the materials developed for use in child development courses.

Observation of Speech and Language Pathology in Accra, Ghana

Bryanna Marshall, Speech-Language Pathology
Faculty Mentor: Professor Jo Yudess, Center for Studies in Creativity

Many children in the urban area are suffering from severe speech and language impairments due to the lack of a Speech Pathologist, education, and/or resources. The purpose of the current study was to determine how the living environment plays a part in the child's speech-language development in an urban area. Data was gathered through observations of the students' daily challenges, circumstances, and conditions. During a trip to Accra, Ghana in January, obstacles to services for children with speech-language difficulties were observed as well as the rarity of government involvement supporting equal education, and minimal Speech Pathologist existence. These students need immediate assistance, diagnosis and, treatment. In the Ghanaian community, it is very common for individuals to believe that children who have a disability are cursed, so they avoid them. Schools must depend on volunteer Speech Pathologists to show educators how to work with students who have a speech and language deficiency and to suggest interventions. Having access to proper services would give students more opportunity to excel in society.

Ovary-acting: Cortisol and Ovarian Hormones Influence Emotional Memory Consolidation

Aishwarya Patwardhan, Patricia Russo and Sean Clark, PSY 499
Faculty Mentor: Professor Jean DiPirro, Psychology

This study is designed to investigate the effects of estradiol (E2) and progesterone (P4), in the presence of heightened levels of cortisol, on the consolidation of emotional memory in female BSC students. Previous research has shown that ovarian sex hormones increase stress-induced cortisol release. Further, elevated cortisol levels are associated with enhanced emotional memory consolidation. Taken together, these data suggest that, in a response to a stressor, women with higher levels of E2 and P4 will experience greater cortisol release and therefore enhanced emotional memory compared to women with lower levels of E2 and P4. Accordingly, naturally cycling women in the luteal phase (high E2 & P4) will exhibit better recall for emotional memory consolidated under stress than will naturally cycling women in the follicular phase (low E2 & P4) and women taking combined hormonal contraceptives (low E2 & P4). To test this hypothesis, we will present a short emotional story in visual and auditory form to subjects, expose them to a cold stressor directly after the conclusion of the story (during the consolidation phase), and assess their recall for elements of the story one week later. The design is a 3 (E2/P4 LEVEL: HIGH [luteal phase] or LOW [follicular phase] or LOW [monophasic contraceptive use]) X 2 (STRESSOR: PRESENT or ABSENT) between-subjects factorial design. Our goal is to test 35 subjects per group (N = 210). The results of this study should provide important information about the relationship among female reproductive hormones, stress, and memory. Data collection is ongoing.

The People Vs. Patrick Sneed

Ariel Cook, English
Faculty Mentor: Professor Lisa Berglund, English

"The People Vs. Patrick Sneed" is a transcription and annotated edition of handwritten court documents (originally 31 pages), written in 1853 and owned by the Buffalo History Museum. The papers were donated by a man named William Hodge, who had seemingly no connection to the case, nor was he the writer of the papers. Part of the research process for this project involved investigating how and why Hodge had these papers in his possession. The documents relate to Patrick Sneed, a fugitive slave employed at the Cataract House in Niagara Falls, who was accused of an 1849 murder. To create an edition it was necessary to identify and find information on the several people, places, and events involved in this case. Substantial research was done through archival databases available online, as well as in the holdings of the Buffalo History Museum; additional insight was provided by a visit to Niagara Falls Underground Railroad Museum. The project also required study of 19th century handwriting and research on legal terminology, abbreviations, and other terms of art. The final edition incorporates this information into a cover page, acknowledgements, introduction (historical background), description of editorial method, biographical directory, lightly edited transcription with footnotes, and bibliography. The edition thoroughly identifies all the principal persons involved in the court case, offers a complete report on the legal arguments and the judge's ruling, presents two theories for the inclusion of the papers in the Hodge collection at the Buffalo History Museum, and for the first time connects the allegations against Sneed to an actual murder case in Georgia.

Predictive Effect of Eating-Induced Anxiety Reduction on Weight Gain

Kristin Czajka, Psychology
Faculty Mentor: Professor Naomi Mckay, Psychology

People under stress increase consumption of food items that are high in fat and carbohydrates. Why there is a shift in food choice and elevated caloric intake during stress has not been studied. Previous findings have shown that unhealthy food reduces self-rated anxiety. The current project will determine if people who have greater anxiety relief from food will gain more weight over a year. It is hypothesized that suppression of anxiety in response to eating will be predictive of weight gain over time. Augmented weight gain in those individuals that had a reduction in anxiety due to food intake is expected. A year ago the McKay lab conducted a study on the effects that different types and portions of food had on the reduction of anxiety. These participants are now being brought back into the lab to test whether those individuals with greater anxiety reduction in response to eating had an increase in weight gain over the year. Upon arrival to their visit, all participants will be given an Informed Consent form, complete a packet of questionnaires and then have their blood pressure, heart rate, and height and weight measured. Results indicate a bidirectional distribution of weight. These findings may result from individual behavioral choices, such as restrictive eating or disinhibition. Further research should be conducted to assess the relationship between dietary behavioral choices and food intake when under stress.

Predictors of Success in a Psychological Statistics Course

Nicole Flanagan-Morreale, Jessica Lipka, Samantha Ribbeck and **Michelle Viera,** PSY 488: Psychology Internship
Faculty Mentor: Professor Howard Reid, Psychology

Psychology departments across the country commonly require that their majors take a statistics course. Students frequently report, however, that they find the course challenging. At BSC, students taking the required Psychological statistics course (PSY 306) most often identify their dislike of math as the reason they do not want to take the course. The current study was designed to identify the most important predictors of success in the course. Data were collected from 45 undergraduate students enrolled in PSY 306 who were given a questionnaire addressing factors that we hypothesized might predict their exam scores. These included psychological measurements of achievement-striving, self-efficacy, math anxiety, general anxiety, conscientiousness, and industry. Additional questions included whether they believed statistics should be required, how much they studied for exams, how much of the textbook they read as well as if they reached out for additional help from the professor or teaching assistants. Regression analysis demonstrated that the significant predictors of the students' exam scores were the belief that the course should be required, reading the assigned textbook, total credit hours the student was taking (negative predictor), hours spent studying and, finally, attending review sessions (marginally significant). Surprisingly, none of the psychological measurements were found to be significant predictors of students' exam scores.

Presentation of Financial Information Affects Student Anxiety and Upsettedness

Haylee Clark, Psychology
Faculty Mentor: Professor Jill Norvilitis, Psychology

The purpose of this research study was to examine how presentation affects anxiety and upset levels in psychology students. Students were presented with scenarios that were either straightforward in their presentation of financial situations or that had identical financial implications but were worded in a more stressful manner. Results showed that the more stressfully worded scenarios did indeed cause participants to be more anxious and upset. There was a positive relationship between how upsetting and anxiety provoking students found the two types of scenarios to be, indicating some students are more upset by difficult financial situations than others. Regardless of scenario type, participants who reported higher levels of anxiety reported the scenarios to be more upsetting and anxiety provoking. This resulted in a response pattern of finding one scenario upsetting and finding the other upsetting as well. Further, the more reliable someone is, the less upset they were across both scenarios. Those who reported higher levels of impulsivity reported that the scenarios were more upsetting but not more anxiety provoking. Poor financial well-being is likely to results in more anxious responses.

The Psychological Effects of Solitary Confinement Between Genders

Khalil Jones, Abigayle Sigurdson, Jaida Rodriguez and **Iyana Drake,** CWP 102: Argumentation and Research
Faculty Mentor: Professor Jane Sullivan, Writing Program

Whereas hundreds of years ago solitary confinement was less a punishment as it was a rehabilitation philosophy, in recent times questions are raised toward the practice due to the cruelty inmates have evidently faced while subjected to disciplinary segregation. This research will examine the short- and long-term effects of solitary confinement, specifically, analyzing superman prisoners based on gender and their experience in solitary confinement. We will focus on the correlation between prisoners and mental issues, self harm rates, and suicide rates occurring within the prisons. The positives of solitary confinement will be included as well. With prior I.R.B. approval, we will be interviewing inmates and prison staff to better understand the personal experiences of confined individuals. Suggestions will be made on the different ways solitary confinement could be reformed and if it is worth continued practice of this philosophy in our prison facilities.

Relations Between Screen Time on Social Media and Mental Well-being

Ryan Tetreault, Tiana Gutierrez, Natasha Hausle, Hannah Kanouse, Brianna Bailey and **Abigail Farr Summer Oliver,** PSY 295
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Everywhere we go we hold a digital world in our hands, filled with social media apps that are part of our everyday lives. The purpose of the current study was to examine the relationship between screen time on social media apps and levels of depression, anxiety, and procrastination (well-being variables). We hypothesized that depression, anxiety, and procrastination levels will increase for those who spend more time on social media apps, and these correlations should strengthen as the semester progresses. iPhone users were recruited from the Buffalo area, completing three online surveys at three time-points throughout the semester: the beginning, midterms, and finals. Each survey included a series of questionnaires that measured the well-being variables, as well as an objective screen-time measurement for Twitter, SnapChat and Instagram. The objective screen-time measurement is a new way of looking at phone usage

as compared to previous research that used subjective measures. Survey one included 65 participants. The results of the first survey showed that total actual screen time had no correlation with any of the well-being variables, although, total actual screen time was positively correlated with general anxiety in males. Furthermore, estimated total screen time yielded some interesting correlations for both males and females. For females, higher estimated screen time was associated with less procrastination and higher anxiety about privacy on social media. For males, higher estimated screen time was associated with greater anxiety and depression. Further results from the first two surveys will also be presented.

The Relationship Between Childhood Maltreatment, Adult Attachment, and the Way We Receive Love in Intimate Relationships.

Summer Oliver, Psychology
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Love is a complex concept that entails many different facets. When looking at parental relationships it is hard to look past the fact that some children have more unpleasant experiences than others. Due to the poor behavior of their parents some children are considered to experience childhood maltreatment. There are four categories of child maltreatment: physical abuse; sexual abuse; neglect; and psychological/emotional abuse. To say the least, there is nothing about child maltreatment that conveys an interest in the well-being of the child, and one could say there is a lack of love. When we look at love in adult romantic relationships, we tend to find that individuals have certain behaviors that can be explained by what are known as attachment styles. Adult attachment style is the interwoven elements of insecurities, knowledge, and expectations one has in their interpersonal relationships and there are two types—secure and insecure. When in a romantic relationship, partners also perform certain behaviors intended to maintain relationship satisfaction. These behaviors are known as relational maintenance strategies (RMS). They can either be routine and done unconsciously, or strategic with conscious effort on the relationship. In 1992, Gary Chapman published, The Five Love Languages: How to Express Heartfelt Commitment to Your Mate. Chapman suggests that everyone feels love from their partner through certain love languages: words of affirmation, quality time, receiving gifts, acts of service, and physical touch. This study looks at how one feels loved and how that feeling may be shaped from experiences in childhood, such as attachment and maltreatment.

Sailor Suits: A Global Phenomenon

Leah Glenn, MST 623: Digital Museum Collections
Faculty Mentor: Professor Noelle Wiedemer, History and Social Studies Education

Buffalo State College has the honor to work with and research the Howard D. Beach Photography Studio Collection. In the Digital Collections class offered in the Museum Studies Graduate Program, students cleaned, cataloged and researched the people whose photographs were taken by Beach. His career spanned over 50 years, in the early 20th century, and throughout them he took many photographs of children. In these photographs I noticed a similar trend of costumes worn by the children. These costumes were called sailor suits and were very popular among the upper-class families of America. They began as a miniature sized outfit of British Royal yacht workers, first worn by Edward, Prince of Wales, in 1846. From that moment in history the sailor suit became the most popular trend in children's fashion. There were discrepancies throughout history claiming that the costumes forced young boys to look like adult men, yet the manufacturers later made sure to make clear distinctions to keep the sailor suit styles to boyhood. In my research I focused on the sailor suit's history, production and variations of the sailor suits throughout the world, and how they are worn today. Beach's portraits shed a light on how the sailor suits and sailor dresses evolved throughout 20th century American history.

Sexual Exploitation by Peacekeepers and Gender Equality

Amal Bandow, PSC 470: Senior Seminar
Faculty Mentors: Professor Patrick McGovern, Political Science, Professor Mehwish Sarwari, Political Science and Professor Kyeonghi Baek, Political Science

Research into the United Nations and other international organizations has revealed a myriad of sexual abuse allegations against peacekeepers. International organizations have been accused of fostering sexually predatory environments during missions. These incidents undermine the legitimacy of all peacekeeping operations and international organizations. The literature has considered factors for this phenomenon such as impunity and masculinity. This paper will consider the conditions of countries hosting peacekeeping missions, specifically gender equality levels. The author contends that gender equality levels of a hosting country will significantly impact sexual exploitation by peacekeepers; a more equal society will provide better legal, political, and social support for women, thereby deterring assaulters. This study uses cross sectional time series analysis and logistic regression models. The first hypothesis tested is as the percentage of women in parliament increases, sexual exploitations by peacekeepers decreases. The second hypothesis tested is as the percentage of women in the paid labor force

increases, sexual exploitation by peacekeepers decreases. Lastly, as school enrollment of girls in primary school increases, sexual exploitation by peacekeepers decreases. The results indicated that there was no significant relationship between gender equality and peacekeeping sexual violence. However, research suggests a significant relationship between economic development of hosting nations and sexual exploitation by peacekeepers; thus, suggesting the need for further research.

The Significance of Birth Order on Personality Traits

Brianna Jean Baptiste, Andrew Collins, Nzinga Lang and **Tyreek Mason,** CWP 102: Argumentation and Research
Faculty Mentors: Professor Jane Sullivan, Writing Program and Professor Susan Mary Paige, New Student Academic Programs

There is an ongoing debate of the correlation of birth order to personality. To date, research has not secured definitive findings; however, we do believe there is a connection to birth order and specific personality traits, specifically those considered stereotypical. Through a comprehensive literature review of past studies, we hope to examine the existence of such a correlation specifically to suggest the stereotypes of birth order are true; the oldest is the A-type dominant personality, the middle child is the peacemaker, and the youngest is the carefree, humorous, artistic type personality. Additionally, we plan to show evidence why these personalities emerge with specific birth orders and explain some of the outlying conditions that make a personality veer away from the dominant personality type normally predetermined by birth order. To determine the validity of the research, with prior IRB approval, we will conduct a survey of college freshman on a diverse four-year urban campus to confirm the findings.

Social Media: Negative Impact on First Year College Students?

Michael Storm and **Shaharin Haider,** CWP 102: Argumentation and Research
Faculty Mentors: Professor Susan Mary Paige, New Student Academic Programs and Professor Jane Sullivan, Writing Program

In recent years there have been increasing debates about the effects of social media sites, such as Facebook and Snapchat on mental health. Some researchers have made connections between social media sites and adolescent behaviors, such as an increase in stress, anxiety, and depression. Others believe that these concerns are overrated, and these websites are a place for adolescents to communicate and foster creativity. Our research focus will be to measure the time spent on social media as a measure of the impact of social media has on the first year college student's school and work environment. We will compare this variable to their academic standing and self-reported mental health support. With prior IRB approval, we will develop a measure to help first year urban college students assess (a) the percent of their time spent on social media usage, (b) the percentage of how they use social media (i.e. leisure usage rather than school/work related usage), and (c) the impact it has on their academic standing and by extension their mental health, specifically if they begin counseling within their first year of college.

Take a Bite, If You Like: Reducing Physiological Stress Effects

Shane McKnight, Psychology, **Emmitt Horvatits,** Psychology and **Isabelle Sequeira,** Psychology
Faculty Mentor: Professor Naomi McKay, Psychology

Elevated stress levels, either perceived or physiological, increases energy intake. Furthermore, when specific macronutrients are examined, people under stress increase consumption of food items that are specifically high in fat and carbohydrates. In a large portion of the population, stress elevates caloric intake, and that this is caused by a shift in food preference towards high fat and high carbohydrate foods. Although the effect that stress has on food intake has been extensively examined, why stressed individuals increase food intake has received very little attention. It was hypothesized that after eating an unhealthy food item, participants would have an accelerated reduction in the activation of the stress response and perceived stress. After an initial rest period, participants had their baseline perceived and physiological stress measured. They then underwent the Trier Social Stress Test (TSST) which is a well-established method that reliably induces mild acute stress. Participants were then given one of the food conditions, a Twix candy bar to eat, an equal gram portion of carrots, or nothing but a magazine to read. Measures of stress were monitored throughout this time. Data collected showed that there was no significant difference between conditions. There was a significant difference in alleviated stress based on how much the participants liked their condition ($p<0.05$). These results indicate that individuals who stress eat are more likely to experience decreases in stress levels after partaking in something an individual finds highly enjoyable.

There is No Glamour Here: The Life and Letters of Alice Lord O'Brian

Anna Wachtel, Digital Museum Collections
Faculty Mentor: Professor Noelle Wiedemer, History and Social Studies Education

In 2011, approximately 57,000 glass plate negatives taken by Howard D. Beach, a prominent portrait photographer in Buffalo during the late nineteenth and early twentieth centuries, were donated to The Buffalo History Museum. The collection serves as a learning resource for Buffalo State College's Museum Studies students, providing them hands-on experience in how to clean and preserve artifacts as well as conduct research on the background of the subjects photographed. Beach photographed a myriad of people throughout his career and, in the summer of 1921, he photographed Alice Lord O'Brian, the subject of my research and a Buffalo native who served as a canteen director in France during World War I. Through genealogy research, WWI and Red Cross archives, and O'Brian's book, No Glory: Letters from France 1917-1919, I discovered O'Brian's courage and resilience during a time of war and endless tragedy. In 1919, the French government recognized O'Brian for her service, awarding her La Medaille d'honneur des Epidemies [The Military Health Service Medal] in consideration for her first aid work, and La Medaille de la Reconnaissance Francaise [The Medal of French Recognition], which was rarely awarded to women. My research illustrates the importance of documenting and promoting "the achievements of women in history that have gone unnoticed or unrecognized by our larger society" through O'Brian's experiences during the height of WWI.

The Yerkes Dodson Law as It Is Influenced by the Threat of Social Implication and Task Difficulty

Nicholas Gray, Psychology
Faculty Mentor: Professor Dwight Hennessy, Psychology

In the present study, the Yerkes Dodson Law was examined to test what would happen when both task difficulty and social pressures are altered in a performance task simultaneously. This law states that performance typically increases as arousal increases but begins to decrease as arousal becomes extreme or excessive. Forty students from Buffalo State College acted as the participants. They received packets with math problems that were either easy or difficult, to see how performance was altered based on the difficulty of the questions. Threat of social evaluation was also varied for half of the participants in both the easy and hard groups, by telling them that their response would be evaluated by another person. The results of the study did find significant results with regard to task difficulty and performance. As task difficulty increased the performances of the participants decreased. The social implication variable did not show significant results, however it did show a positive trend that would be worth studying further. The trends began to show some performing more poorly with the threat of social implications. With a larger sample size, the interaction between task difficulty and threat of social implication could be evaluated. In addition, a planned follow up study will look at how different personality variables might alter these relationships as well.