Saint Vincent College

20TH ANNUAL ACADEMIC CONFERENCE

April 26, 2023

2:30 – 7 P.M. | SIS AND HERMAN DUPRÉ SCIENCE PAVILION

A multidisciplinary exposition and presentation of student research and academic accomplishments in business, communication, computing, education, humanities, fine arts, mathematics, natural sciences, social sciences and other fields.

Dear Saint Vincent College Community and Friends,

We welcome you to the 20th annual Saint Vincent College Academic Conference, during which we celebrate the interesting and often innovative work our students produce throughout the year. This conference is a testament to the dedication of Saint Vincent faculty and administrators who encourage and support students in conducting advanced scholarly inquiry and creative work in their disciplines. Saint Vincent faculty dedicate their time to mentoring students in critical scholarship, as well as in classroom projects in the Humanities, Natural Sciences, Computer Sciences, Social Sciences, Arts, and Business. The students who present at this conference have ambitiously seized these opportunities and brought their projects to completion. We are very proud of their work, and we invite you to take part in this event which recognizes their achievement. This conference is an opportunity for our students to enlighten our academic community by sharing new ideas and creative expression.

The Academic Conference is held in the Sis and Herman Dupré Science Pavilion. This venue facilitates engagement and interaction among Saint Vincent College students, faculty, administrators, staff, friends and family. The central atrium and surrounding hallways are the site of art demonstrations and poster presentations from students in diverse disciplines. The classrooms on the first and second floors of the atrium and the east wing of the complex hold panel sessions that include oral presentations of research, critical analysis papers, and literary readings. At the Verostko Center for the Arts Gallery (located on the 2nd floor of the Latimer Library), several senior art, sport & media, digital art & media, and communication students are present to display and discuss their visual artworks. We encourage all attendees to explore the many high-quality intellectual pursuits our conference showcases!

This program contains the schedule of oral and poster sessions and abstracts for each presented project. Please peruse this booklet to find presentations that pique your interest and to learn more about the works our students have accomplished. An electronic version of this program is also available – look for signs around the pavilion with a QR code that will bring you directly to the program on the Saint Vincent website.

Many people have dedicated time and energy to bring this conference to fruition. The faculty, students, staff and administrators who were directly involved in planning the conference are listed in this program. This list, however, is far from comprehensive in recognizing the many individuals who extended themselves at this busy time of year to make this conference possible. This conference is truly a community-wide effort.

We hope that you emerge from your time at the conference with a fuller appreciation for the intellectual dynamic that lies at the center of our work at Saint Vincent College.

Sincerely,
2023 Academic Conference Co-Chairs

I. Mitch Taylor, Ph.D.
Department of Chemistry

Annie Laurie Nichols, Ph.D.
Department of Communication

Saint Vincent College

Sixteenth Annual Academic Conference

2023 Academic Conference Committee

Dr. I. Mitch Taylor, Co-chair

Dr. Annie Laurie Nichols, Co-chair

Dr. Tim Kelly	Dr. Peter Smyntek
Dr. Terrance Smith	Dr. Derek Breid
Dr. Devin Fava	Dr. Sarah Dumnich

Donors

Support for the Academic Conference is given in memory of Dr. Greg Howard C'68, by Donna Howard

Acknowledgements

The committee wishes to thank everyone who helped to prepare for this conference. We especially thank the following people and groups for their assistance:

Mr. George Fetkovich, for designing the cover and promotional materials

Saint Vincent College FMO staff, for their efforts in setting-up for the event

Ms. Kaylee Goykovich, for assisting in the creation of the abstract submission form

The students and committee are also grateful to the faculty who assisted the students with the preparation of their work. Names of faculty sponsors appear in their students' entries in this program.

Grant Support for Student Research

The following grant programs support student-designed research and study at Saint Vincent College. Individual project entries indicate grant-supported projects, where applicable, throughout the program.

The A.J. Palumbo Student Research Endowment

Established in 1996, the Palumbo grant program supports student-initiated learning and discovery in the arts, sciences, humanities and professional programs. Grants are awarded on the basis of proposals submitted by the students and reviewed by a committee consisting of both faculty and students. The endowment memorializes the late Mr. A. J. Palumbo, a noted Pittsburgh industrialist.

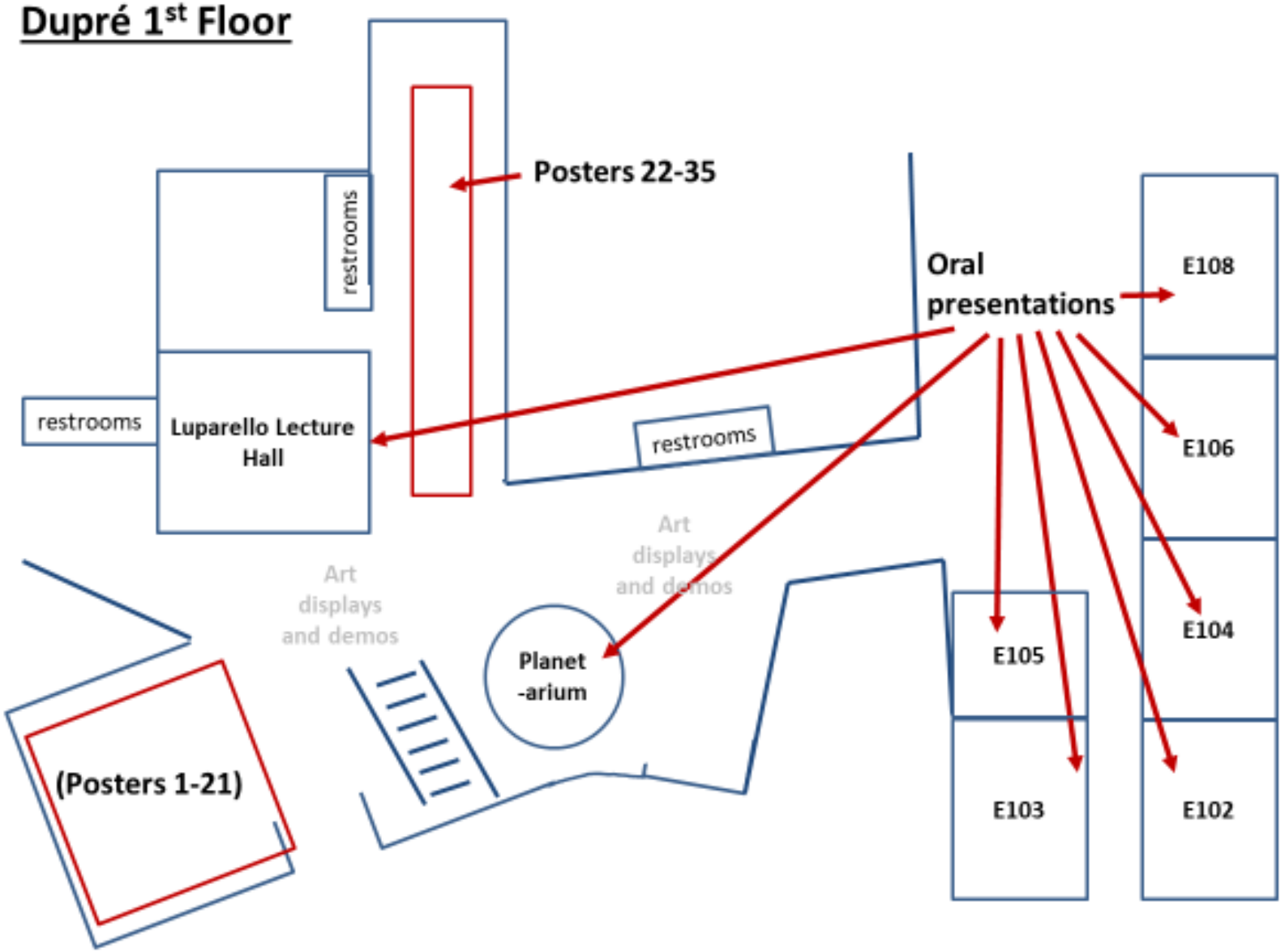
The Elizabeth and Tom Andreoli Traveling Scholar Endowment

Established in 1997, the Andreoli Traveling Scholar Endowment funds students who wish to enrich their education through special opportunities that require travel in the U.S. or abroad.

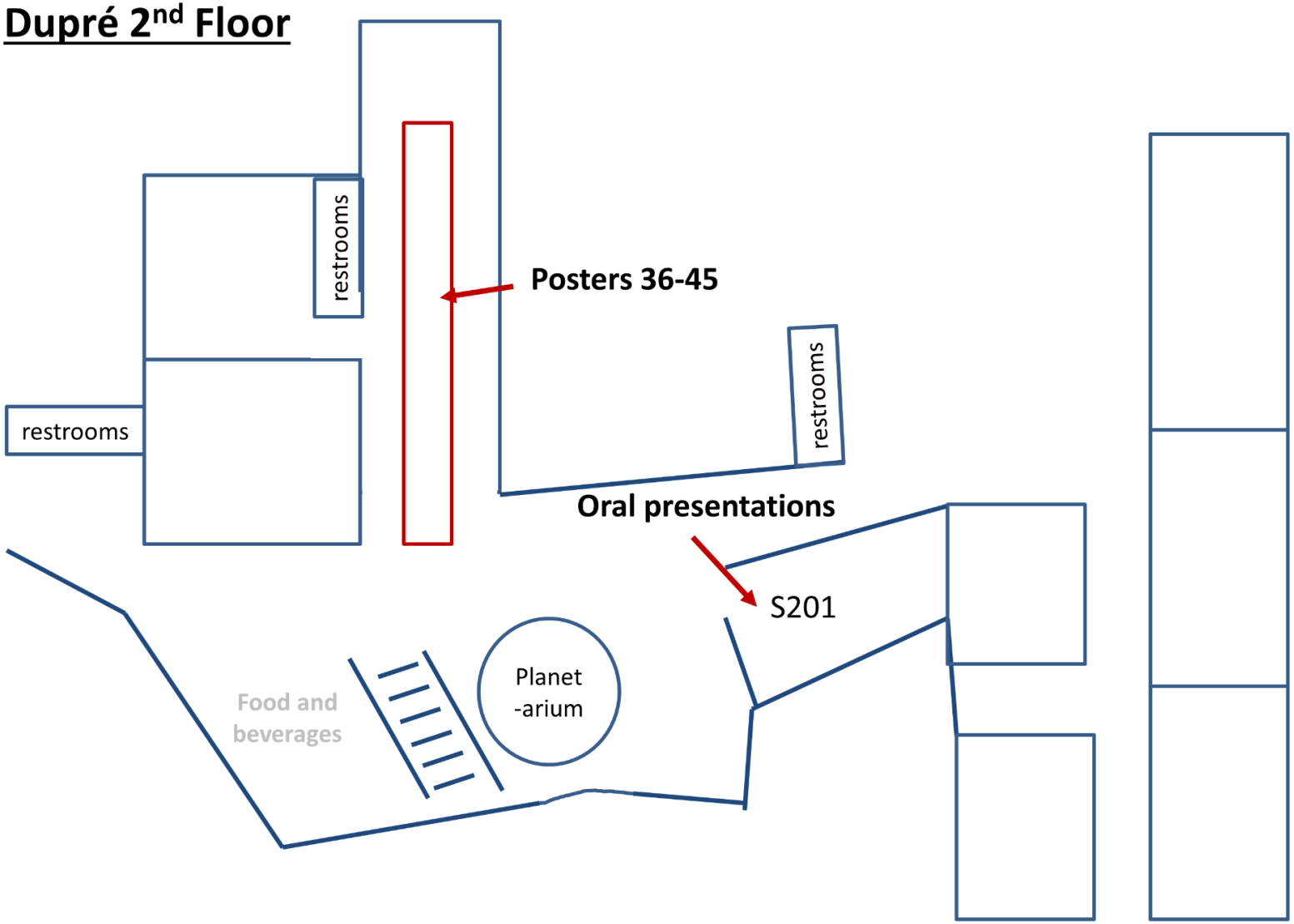
Overview of Oral Sessions

Time	E102	E103	E104	E105	E106
2:45-4:00	Theology	Data Science	Criminology	English	Liberal Arts
4:15-5:30	Psychology	Statistics	Engineering II	Physics	Philosophy

Time	E108	S201	Taiani Planetarium	Luparello Lecture Hall
2:45-4:00	History	Engineering I	Politics	Biology I
4:15-5:30	Public History	Shakespeare in London	Writing Consultants	Biology II


Dupré 1st Floor
Posters 22-35
restrooms
Oral presentations
E108
E106
E104
E102
E103
E105
restrooms
Luparello Lecture Hall
restrooms
Art displays and demos
Art displays and demos
Planet -arium
(Posters 1-21)

Dupré 2nd Floor



Art Exhibitions: All sessions

Greenhouse
Art Demonstration
Br. Mark Floreanini
Stained Glass Installation, Owen Shotts, Julia Sarnowski, Sarah Mott, Taylor Wahl, Jaden Gales, Michelle Kozusko

Atrium
Art Exhibits
Br. Placid Sellers
The DaVinci Man Project -and- The Fibonacci Sequence & Golden Ratio, Sarah Hartner, Caitlin Hopkins, Brandon Hallick, Elizabeth Madden, Anastasiia Umrysh, Caitlin Cole
The Study of the Medical Illustration of the Human Anatomy, Brianna Arnold, Natalie Makovics, Lauren Turkovich

Verostko Center*
Art Exhibits
Interiority, Carly Bodner, Keegan Burd, Miriam-Moira Donovan, Iven Etienne, Brandon Hallick, Kendall Janosko, Genevieve LaFosse, Lillian Joan Lickona, Julia Mathias, Luke Mich, Hannah Noel, Will Radan, Brennan Valladares

The Verostko Center for the Arts is located on the 2nd floor of the Latimer Library

Oral Session One: 2:45-4:00

E102
Theology
Dr. Catherine Petrany

"[S]he imbibes eagerly from Love's deep veins": Eucharistic Theology, Late Medieval Christology, and the Poetry of Hadewijch, Nicole Buchek
The Wounded Healer: How Nouwen can Help the Minister Today Discover Hope Within Suffering in Paul's Second Letter to Timothy, Myrissa Donaldson
"In You, O Lord, I Have Hoped*": Disability, Identity, and Dialogic Relationship in Psalm 38, Elizabeth Elin
Communion Ecclesiology in the Present Age, Bethany Fritsch

E103
Data Science
Dr. Justin Petrovich
Dr. Sarah Dumnich

Developing a Predictive Model for Pittsburgh Penguins Goal Scoring, Logan Goblesky, Ethan Dunsey
Using Machine Learning Algorithms to Reduce Marketing Campaign Costs, Marie Matt, Abigail Schwartz
Identifying Opportunities of Active Management Using Cross-Sectional Standard Deviation & Correlations, Jordan Sabol, Curtis Schrack, Conor Keating
Small Market, Big Challenge: Using Modeling to Increase Pittsburgh Pirate's Fan Turnout, Mason Seftas, Derek Hald, Jacob Polosky
Business Data Analytics Capstone Project - Predicting Future Returns on Funds, Zachary VonStein, Antonio Ferraro, Isaac Little

E104
Criminology
Dr. Kayla Jachimowski

Mental Health Problems and Criminal Tendencies Linking to Drug and Alcohol Abuse, Logan Carns
The Impact of Antisocial Personality Disorder on the Criminal Justice System and Criminal Recidivism, Allyson Foster
Mental Health Disorders and Substance Abuse: The Importance of Dual Diagnosis Recognition, Daulton Riddell
What affect does addiction have on crime/violence?, Anthony Tagliati

E105
English
Dr. Sara Lindey

Haikus and Cake, David Collins
Liberate Yourself: Dump the Diet, Kyra Lipetzky

E106
Liberal Arts
Dr. Eric Mohr

Adolescents Well-Being: A Look Into the Effects of Society and Technology, Morgan Domer (Nutter)
College Athletes and Self-Disclosure, Frankielynn Retort
Bringing awareness to Sanfilippo Syndrome: Educating one mind at a time to find a cure, Shelby Stoner
Steelhead Trout and their migration in and out of Lake Erie's Tributaries, Jordan Stranko

E108
History
Dr. Tim Kelly

Colonial Museums in Contemporary Times: Approaches to the Decolonization of Museum Collections in the UK and US, Kelsie Patton
The Progressive Conservation Movement in Pennsylvania Environmental Education and Reforestation by Laura Horn, Laura Horn
Pro-Choice America? Government's Limit of Women's Accessibility to Birth Control in the Late 19th to the Late 20th Century, Joslyn Rodell
Women with the Military during the American Revolutionary War, Kaitlyn Morrison

Oral Session One: 2:45-4:00

S201
Engineering I
Dr. Derek Breid

Development of a Living Chapel Prototype for the Saint Vincent College Community, Cara Luallen, Helen Kish, Matthew Byrne, Sasha Cindric, Leonel Cuello, Thomas Hedgepeth, Noah Schollaert

Taiani Planetarium
Politics
Dr. Jerome Foss

Isolationism to Interventionism: The Philosophy Behind the Foreign Policy of America, Rebekah Bollman
GW Fellowship: History of Healthcare in America, Richard Pazer

Luparello Lecture Hall
Biology I
Dr. Michael Rhodes

The effects of fluoxetine and L-tyrosine on anxiety and depressive behaviors and stress hormones in caffeinated mice, Olivia Emmonds, Christopher Bouye
The Effects of Nicotine and Lavender on Memory, Stress, and Anxiety Responses in Swiss Webster Female Mice, Mackenzie Moretti, Jessica Persin
The Effects of Sensory Deprivation on Sensory Aversion, Stress Response, and Depressive Behavior in Mice, Anna Shields

Poster Session One: 2:45–4:00

Oral Session Two: 4:15-5:30

E102
Psychology
Dr. Mark Rivardo

How Frequency of Lies Varies by Familiarity and Correlations Between Personality and Frequency of Lies, Emily Bosche

Portrayals of Autism and the Magnitude of the Third Person Effect, Emilee Nedz

Age, Authoritarianism, and Attitudes Towards Mental Health, Sophie Steiner

E103
Statistics
Dr. Sarah Dumnich

America's Favorite Pastime, Joseph Burke

Predicting Georgia Home Prices: A Model for Real Estate Investment and Consumer Decision-Making, Logan Goblesky

Do the Best Cameras Really Cost the Most?, Stefanie Livelsberger

Fish Market Model, Trinity Miller

Predicting the Subscriber Counts of YouTube Channels, Matthew Stehnach

The link between general health and emotional well-being, Antonia Sunseri

Bring In the Southpaw, Sean Talbot

Fish Market Model, Trinity Miller

The Beautiful Game: Is it Actually Simple?, Matthew Wilkinson

E104
Engineering II
Dr. Derek Breid

The Design of a Living Wall Irrigation System, Collin Frydrych, Alek Gmuer, Anthony Vanderelli, Christian Ciecierski

Designing a Living Wall to be Incorporated into the Saint Vincent Living Chapel Capstone Project, Bradley Hallick, Victoria Sant, Morgan Klingeman, Mark Grenchik

Living Wall Irrigation System, Alex Hess, Hunter Grimes, Michael Fekete, Andrés Mateos Carrión, Braden Rankin

A Living Wall For a Living Faith, Sullivan Kennedy, Zachary Kutek, Fulton Fontana, Nathan Cooper, David Lynn

E105
Physics
Fr. Michael Antonacci

A Search for Radio Stars and Radio Beacons from ETI Civilizations - I, Will Mallah, Sam Bringman

A Search for Radio Stars and Radio Beacons from ETI Civilizations - II, Sam Bringman, Will Mallah

Computational modeling of X-ray attenuation and simulation of medical imaging, John Meneghini

E106
Philosophy
Dr. Michael Krom

The Limits of Just War Theory: An Analysis of Its Historical Development and Contemporary Challenges, Ronald Bell

Enquiry into the Notion of Categories in Aristotle and Kant, Jacob Holleran

Life, Liberty, and Healthcare, Richard Pazer

E108
Public History
Dr. Karen Kehoe

A Walk through the Grove: The Work of the Practicum in Public History, Nathan Lozano, Joel Martirano, Gage Morrison, Andrew Connelly, Joshua Canty, Abigail Bashioum

Oral Session Two: 4:15-5:30

S201
Shakespeare in London
Dr. Dennis McDaniel

The Royal Shakespeare Company, Therese Oldenburg, Mila Kalcevic
A Look at the History and Design of Shakespeare's Globe Theater, Angel Scalamogna, Victoria Viola
Impact of Westminster Abbey, Michael Waros, Gage Mortimer, Dustin Logue

Taiani Planetarium
Writing Consultants
Ms. Mallory Truckenmiller Saylor

Engaging Communities within Writing Centers, Steven Kenderes
Writing Consultation Philosophy: Balancing Collaboration and Instruction, Delaney Fox
Collaborative Writing Consultation, Carter Cavalier
Peer Tutoring in the Writing Center: Authority over Motivation, Gabriel Seevers

Luparello Lecture Hall
Biology II
Dr. Michael Rhodes

Analyzing the Physiological Effects of ALDH2*2 Knockdown Zebrafish using CRISPR/Cas9, Sarah Helsel
The Effects of Geographical Location on Tolerance of Humans as Observed in the American Crow (Corvus brachyrhynchos), Kari Fenner
Effects of commercial probiotic on chicken embryo immune response when challenged with poly (I:C), Ava Dorazio
Population Genetics and Wing Variation in Spotted Lanternfly Populations in Western Pennsylvania, Clare Mulcahy

Poster Session Two: 4:15-5:30

2:45-5:30
Dupre Atrium
Studio Arts

Greenhouse Stained Glass Installation

Note: This session will take place in the greenhouse.
Owen Shotts, Julia Sarnowski, Sarah Mott, Taylor Wahl, Jaden Gales, Michelle Kozusko
Studio Arts
Faculty Advisor(s): Br. Mark Floreanini O.S.B.

Six of the stained glass students along with the Professor, Br. Mark Floreanini, were given the go-ahead to install stained glass in the exit door leading toward the greenhouse. This stained glass installation includes 8 separate panels. The design was created by Br. Mark. The actual work making the stained glass was done by Owen Shotts, Julia Sarnowski, Taylor Whal, Sarah Mott, Jaden Gales, and Michelle Kozusko.

The DaVinci Man Project

Sarah Hartner, Caitlin Hopkins, Brandon Hallick, Elizabeth Madden, Anastasiia Umrysh, Caitlin Cole
Studio Arts
Faculty Advisor(s): Br. Placid Sellers O.S.B.

A visual project combining Leonardo da Vinci's iconic Vitruvian Man image representing the sciences, blended with the beauty of personal photography and imagery.

The Fibonacci Sequence & Golden Ratio

Sarah Hartner, Caitlin Hopkins, Brandon Hallick, Elizabeth Madden, Anastasiia Umrysh, Caitlin Cole
Studio Arts
Faculty Advisor(s): Br. Placid Sellers O.S.B.

Can you see it?
It is all around us!
The students of the Saint Vincent College Digital Photography & Post-Production Course present their interpretation of: "Fibonacci & Mathematics presented in the Beauty of Nature & Imagery: A blending of the Arts & Science."

2:45-5:30
Dupre Atrium
Studio Arts

The Study of the Medical Illustration of the Human Anatomy

Brianna Arnold, Natalie Makovics, Lauren Turkovich
Studio Arts
Faculty Advisor(s): Br. Placid Sellers O.S.B.

The purpose and design of this course (SPRING SEMESTER AR-203 [cadaver dissection]) is to provide the Medical Illustration student with a realistic medical operating room scenario/environment; where a doctor requests photographic and illustrative documentation of surgical discoveries and procedures for teaching and diagnosis. Krista Jobe, the professor of the Human Anatomy / Physio. Lab II course, is our client, needing visual documentation of dissections that could be similar to surgical procedures in which the students discover the importance of photographically documenting any kind of anatomical/surgical procedure in a sometimes tense and always sterile environment; understanding that an anatomically correct and pristine illustration of the surgical finding is necessary for clear and concise teaching and diagnosis of an anatomical structure that may not be visibly clear during the often spontaneous scenarios encountered in a real life (and sometimes messy) surgical operation/procedure.

Verostko Center for the Arts
Latimer Family Library, 2nd Floor
Interiority Student Art Exhibit

Interiority

A collaboration between the College's Communication and Fine Arts Departments, the 2023 senior exhibition features the creative work of seven Communication majors; three Digital Art + Media majors; three Sports & Media majors; and one Studio Art major. Collectively taken, this cohort of seniors produced projects that engage the parts of ourselves which are often left unspoken. The videos, paintings, and websites that comprise this year's Showcase are evidence of students' ability to use both digital and analog tools in the service of narrating ideas of deep personal significance.

As part of the 2023 Academic Conference, all are invited to view the 2023 Senior Showcase, *Interiority*. Stop by the Verostko Center for the Arts between 10:00 a.m. – 7:00 p.m. on Wednesday, April 26. For the Center's normal hours, visit verostkocenter.org. *Interiority* runs through May 5.

Carly Bodner

Major: Digital Art + Media, Film & Animation concentration, Minor: Studio Art
Chachi, 2:30 minutes

How May I Inspire You This Evening?

Through the arts, I express myself and my ideas. My creative portfolio reveals the multiple media I employ, including filmmaking, writing, animation, and illustration. The skills I've gained in a variety of media allow me to tell each story in the way I believe best suits the content. Drawing, writing, and filmmaking are all ways I've found I can bring my dreams to life, create worlds from scratch, or build characters out of nothing. By showcasing my work, I can convey to others what I see and how I see things.

I'm drawn to stories for different reasons. I'll find myself captivated by the illustrations on the cover of a novel and wind up immersed in a great adventure story. I might have a strange dream during the night and want to recreate it in a painting. Some days, I'll watch a movie for entertainment, while other times, my favorite films act as a much-needed escape from daily life. Truly great stories become much more than a film, a book, or a drawing; they make me laugh, make me cry, thrill me, scare me, or even reveal something I had never previously thought to explore. They can bring people together and keep others close.

I'm constantly motivated to create – along with the personal satisfaction that comes with creating something new, having the ability to move or inspire others in the process gives it even more meaning. As an artist, I want to tell engaging and meaningful stories. And whether or not my work has managed to entertain, inspire, provoke, transform, or even simply amuse, my aim remains to have told a story that sparked the imagination. I want to express myself and my ideas, and hopefully, deliver a unique experience to the audience along the way, giving to others what I love so much about storytelling.

Keegan Burd

Major: Digital Art + Media, Film & Animation
Characters in My Head, 2 minutes

The most important thing for me is that all my characters feel unique. I like to add little pieces into a character's design that make them feel like a real person – things that make you look at them and say, "I know someone who wears those kinds of clothes, I know someone who acts like that." When I animate them, I want them to have their own distinct movement and style. Adding little quirks and oddities to my characters feels like I'm giving them a bit of humanity in a way. Even when they're obviously fictional in some respects, I never want my characters to feel fake.

Miriam–Moira Donovan

Major: Digital Art & Media, Graphic Design concentration
A Thousand Words (website)

There's a saying that goes "a picture is worth a thousand words", and I think it's a little more than that. A picture is a window into the eyes of the one who took the picture, painted the painting, designed the poster, or made the website. It allows others to see your unique perspective and how you see beauty even in the most mundane things.

I want to draw your focus to these mundane things; the things other people would overlook. I want to draw you into the world I see, where the little things are HUGE. A frosty leaf on a cold day, steam rising off a lake, a tiny flower just poking its head out of the dirt. To most people, these things are normal, every day, or boring. We are so desensitized to the world around us that unfortunately, many beautiful moments go unnoticed.

Through my photography and design, I seek to show the inherent beauty of creation in such a way that maybe, just maybe, I'll invite someone to look just a little bit closer the next time they are outside. Maybe you will notice something you would have missed as you go about your busy day, something small and magical that fills you with wonder. And maybe your life is a little bit better because of it.

Iven Etienne

Major: Sports & Media, Minor: Management
Only Time Will Tell, 2:01 minutes

I have an affinity for sports and their power to bring people together. I want to capture the passion and energy that comes with athletics and show people how unforgettable these moments are. I take great pleasure in my journey of self-discovery by exploring the intersection of creativity and sports in my work. I'm looking forward to continuing to capture the beauty, energy, and power of athletes in motion. I want to showcase the moments of triumph, celebration, and pure joy that comes from competition. As an athlete and an artist, I am always open to new ideas and am continuously striving to sharpen my creative edge. Come along on this journey with me as I develop, only time will tell where I'll end up. Looking ahead, the creative side of me is ignited and it is my joy to share my visions with the world.

Brandon Hallick
Major: Communication
Brandon by Brandon, 2 minutes

This one time I was walking through a city late at night. I was all alone, and some guy came up to me and threatened to rip my throat out. When he said it, I laughed and ran away. I laughed because it was a funny thing to hear, I ran away because I was terrified.

The mission is to capture contradictions, for there is nothing more true than something which proves itself false.

Kendall Janosko
Major: Communication
I*.D.K.W.T.F.I.D.,* 2 minutes

I am a jack of all trades but a master of none. I am an actor without a role, a writer without a pen, a filmmaker without a camera. I am a comedian without material and a singer without a band. I am an artist without a canvas and even if I had one, I wouldn't know what to paint. I know my way around a hammer and nail, but I'd rather sleep than build a house. I enjoy learning about history but research is boring. I have so many ideas, but there aren't enough hours in a day. I am a jack of all trades but a master of none.

Genevieve LaFosse
Major: Communication, Minor: Theology
Make Moments Immortal, 2:39 minutes

To be there and let images, people, and life surprise me is how I want to live. Whether through photography, videography, performing or writing, I want to communicate these surprises to others, in the hopes that they can let the Beauty of life, as it comes, in the moment, to surprise them too.

As we get older, sooner or later we come to realize that the most important days in our lives are also the ones that go by the quickest. One's college graduation, one's wedding, and the birthday of one's first child pass in the blink of an eye. It is in fact bittersweet as these are the moments one craves to last forever.

Film has the remarkable ability to seemingly immortalize people and events. So often, we watch old films where the actors within have since passed away or grown old, and as we watch, it is as if they are still alive and among us. In my work as a filmmaker, it is my goal to immortalize people and their moments that are sacred to them. I strive to see beauty in the smallest detail and in the most mundane artifact. I strongly believe that every human is dignified and beautiful and that oftentimes they just need someone outside to recognize that and capture it. In my work, I aim to empower people through film, make their moments perpetually in the present, and share their moments with others through my eyes and through my camera lens.

In this day and age, film can be manipulated to the point where it removes truth. I firmly believe in absolute truth and believe that there is a truth in every moment. For this reason, I prefer to produce my films in a way that the editing enhances the truth within the story rather than detracting from it, overwhelming it, or manipulating it to appear differently than it happened. I tend to focus on nonfiction, historical, and accurate events and showcase that through my perspective.

Without the ability to capture any historic moment on film, it would only exist in the memory of the one who was present for that moment. My work consists of me constantly striving to share these moments with people in an interesting way.

Therefore, my production philosophy is to make "moments immortal," because it is through film that our precious moments are captured on camera, giving us the opportunity to relieve anything–even a breath or a blink of an eye–forever.

Lillian Joan Lickona
Major: Digital Art & Media
Better Late Than Never, 2 minutes

There's a catchy little saying in the photography world that goes, "F8 and don't be late!" Briefly, this concept stipulates that if you set your camera's aperture to an F-stop value of 8, and you show up on the scene, you'll make the shot. While as a person I can rarely promise to meet the second half of this adage, my experience and work as a photographer has shown me the true importance of being there. Over the years I have often wondered whether there are any "real" photographers, or just people who find or put themselves in the right place and make the most of it. Having a photographer's "eye" obviously plays into this success (the term F8, after all, is a technical term, implying that knowledge and pursuit of the art are clearly important), but if you take life as it is presented to you, in the moment, the results will pay off.

Julia Mathias
Major: Studio Art, Minor: Biological Sciences

My passion for anatomy began in the eighth grade when I started drawing mythical creatures for entertainment. This fascination grew as I took more in-depth art and biology courses. Within my current work, I combine visual art and anatomy in the form of scientific illustrations. My paintings translate the human body into images that can be understood by audiences both academic and popular. I use my own digital compositions as well as historical references to create acrylic paintings of isolated anatomical structures on a sterile background. This body of work explores an intimacy we all share but don't usually consider – our interior biology. While all too often taken for granted, the human body is its own work of art that demands to be appreciated.

Luke Mich
Major: Sports & Media, Minor: English
One, website

The last few years have become a whirlwind for me, managing the multiple facets of my life into my schedule day in, day out, 24/7/365. My work here encapsulates the chaos I undergo every day, yet I still take pride in what I have done, as it best captures how I live. Revealing this to my audience may help relate my viewers relate to either me or my work, how crazy my life is, but also that while this craziness provides lots of stress and anxiety, there is also yet a beauty to it.

Yet, just as the sports I enjoy, all of the plays, moments, quarters, halves, goals, points, they all form to make a singular game. The game, so conceptually difficult when played, becomes all simple when it ends to become one result, a result that ends in a win for one and a loss for the other.

My belief is that, despite the variety of activities and hobbies I take part of in life, they all become one for me. Because all of these thoughts, paths, and ideas are form together to lead directly to the person who became so willing to employ in them all, the person who made it all "one".

Hannah Noel
Major: Communication, Minor: Marketing
My Career in Focus, 2:24 minutes

As the world moves online more and more, we are inundated with photos. You can Google search just about anything and click on the image tab and there they are. Texts, internet searches, social media, we communicate through images almost as much as we use words anymore. Our everyday access to cameras on our phones and devices makes it easy to capture memories and moments, but to me there is something missing.

Taking photos and videos on our devices allows us to tell our story as we see it, and how we want others to see our everyday lives, the places we have been, the things we have seen, and it's not a bad thing, but as a photographer, I see things in ways many people often do not, and my goal is to tell their stories, in every way that I can, shot by shot, frame by frame because the way I see you is different than the way you see yourself.

A good photographer will be able to stop time with their shot and show you a moment you didn't see the first time, or in the moment, but a great photographer will tell the story better than those who lived it, or in my case, played it. Dorothea Lange said it best, "Photography takes an instant out of time, altering life by holding it still." My goal through my work as a sports photographer is to capture as many of these stories as possible, to show the joys and the sadness, the hurt and the elation that is the world of sports as we know it, but to dive deeper into these emotions, as well as the plays on the field. The player coming to the sideline who just shattered the school's standing record, the player being carried off the field hurt and the bond they share with the brothers or sisters carrying them, the prayer for protection before the whistle blows, and the tears of broken heartedness of a season being cut short, and a seniors last ride with their team. These little moments make up the stories of our lives, the ones that you see as the participant, and the one I want to tell as the photographer. So, what moments would you like for me to capture, who's story would you like me to tell?

Will Radan
Major: Communication, Minor: Digital Art & Media
Will, 2:45 minutes

There is a popular internet trend, where when describing the potential of an event, you say "It's gonna be a movie." While amateur in nature, this memeable phrase acts as my philosophy on life.

One can only pull from what they know. While not always verbatim, all storytellers are trying to do is convey an emotion, thought, or aspiration they once conjured. We have all been a part of moments that are filmic, or at the very least feel filmic. They are the moments you remember for the rest of your life.

What I am interested in is conveying those unforgettable moments through my work, allowing the emotions to live on through the legacy of film. As a hopeful director, my eyes are the camera and my brain is simply storing the ideas for later use. By infusing my life into my work and vice versa, I am allowing film to be a part of my life. I do this with the hopes of film letting me be a part of it, allowing me to tell my stories and translate the emotions I have felt onto the biggest screen.

It is up to you to tell your story and like everything in life, "It's gonna be a movie.

Brennan Valladares
Major: Sports & Media, Minor: Theology
To My Dearest Friend…, 2:18 minutes

Sports have played a foundational role in my life. I have learned invaluable life lessons such as teamwork, time management, and discipline simply by bouncing a ball off the hardwood. As I have gotten older, I have grown fond of sharing my love of sports through different media outlets. Whether through words, videos, or photos, I want others to see how impactful sports can be.

The live sporting event is something that creates an atmosphere of excitement and togetherness. Whether in an arena, at a track or field, the people present are brought together to celebrate competition. There is a rush of adrenaline that follows a poster dunk or a home run robbery that sends a shock wave through the stands. There is an outpouring of emotion when your favorite team wins the championship that will always make you smile. It's these moments that bring everyone to the here and now. Being able to relive these flash points of sports is what I aim to do through my work. Sports allow people to be authentic, and I want to share these affecting stories with as many people as possible.

"[S]he imbibes eagerly from Love's deep veins": Eucharistic Theology, Late Medieval Christology, and the Poetry of Hadewijch

Nicole Buchek
Theology
Faculty Advisor(s): Dr. Catherine Petrany

This thesis paper will focus on the poetry of the 13th century Flemish beguine Hadewijch, whose writings are suffused with Eucharistic themes, a reflection of the growth of lower Christology in the late Middle Ages. I begin by providing an overview of the beguine movement, looking at the ways that living such a new lifestyle for religious women during this time, one that was looked on with suspicion and ultimately condemned by the institutional Church, shaped Hadewijch's theology. Identifying the contours of suffering that are borne of her beguine status leads me to a more specific investigation of her poetry, sampling two poems with strong Eucharistic imagery to identify Hadewijch's reading of this sacrament in relation to her own pain. The explicitly fleshy and bloody depiction of the Eucharist in these writings draws me to connect Hadewijch's theology with the broader context of medieval Christology, particularly as it is written by women. This period is characterized by images of Christ that emphasize His suffering humanity and one's ability to join their own pain to His Passion, a sense that is often lost in modern Christologies. This thesis will demonstrate the connection between the work of Hadewijch and the theological conversations that surrounded her so as to reveal the significance of her voice and those of other women to the Church today.

The Wounded Healer: How Nouwen can Help the Minister Today Discover Hope Within Suffering in Paul's Second Letter to Timothy

Myrissa Donaldson
Theology
Faculty Advisor(s): Dr. Catherine Petrany

The minister today faces many battles, but the ability to create community amid secularization governs the minister's task. Secularization has cut a deep loneliness through the world today, but the cut can be seen beginning even in the New Testament. In the Second Letter of Timothy to Paul, the reader encounter's Timothy, struggling with a deep-rooted loneliness, seemingly grappling with the decision to continue to teach Jesus' Word and continue Paul's legacy. Paul must write to a suffering Timothy while in prison facing his own battles with secularization. When reading this text in light of Henri J.M. Nouwen's The Wounded Healer, the reader can come to see the hope in suffering and the minister's response in Paul's letter. Nouwen's text moves through four chapters, the paper will follow the four chapters, reflecting first on the Biblical text and then connecting the text to Nouwen's chapter. Overall, the paper seeks to explore a way of ministering to the other, rooted in Biblical and contemporary text, not curing suffering and loneliness, but encouraging personal suffering can create a deeper hospitality, understanding, and trust in relationship allowing the other both space and support to face his or her own wounds when ready.

Oral Session One: 2:45pm-4:00pm
E102
Theology

“In You, O Lord, I Have Hoped*”: Disability, Identity, and Dialogic Relationship in Psalm 38

Elizabeth Elin
Theology
Faculty Advisor(s): Dr. Catherine Petrany

In the Psalter, questions of the purpose of suffering abound. The penitential psalms seem to assert a causal link between sin and suffering/sickness, which can be theologically dangerous, especially for disabled readers. Drawing on the cultural model of disability studies – which emphasizes the role of culture in determining who is disabled – and what Hector Avalos terms a “redemptionist” reading framework, this analysis illumines a new reading of disability in Psalm 38 (a penitential psalm). In Psalm 38, the psalmist’s relationship with God solidifies throughout the poem. The psalmist reinforces this human-divine relationship by embracing his suffering and what would today be termed a “disability.” He first affirms the parallels between him and other disabled individuals through figurative language, and then identifies similarly via participial phrases; that is, the psalmist becomes disabled throughout the poem. Lacking strong community amid disability, the psalmist enriches his dialogic relationship with God.

The intersection of disability and theology has become a critical issue in recent years. Emergent, nuanced theologies of disability express God’s emphasis on universal communion. Echoing this reading of Psalm 38, a theology of disability spotlights care and relationship, both of which are central to disability studies.

*Psalm 38:16, translated by Robert Alter

Communion Ecclesiology in the Present Age

Bethany Fritsch
Theology
Faculty Advisor(s): Dr. Catherine Petrany

The Church is often viewed as merely buildings where people come to worship instead of what the Church truly is: a body of believers in Christ. This research paper explores the foundation of communion ecclesiology put forth by Johann Adam Möhler and Henri de Lubac viewing the Church as a people of God. This idea of Church comes to fruition through documents from the Second Vatican Council where communion ecclesiology became a key for the Church to enter modernity. By examining Vatican II documents and other influential documents from the present day in conjunction with texts from Möhler and de Lubac, this paper shows how communion ecclesiology is fundamental for the formation of the Church in the present age.

Developing a Predictive Model for Pittsburgh Penguins Goal Scoring

Logan Goblesky, Ethan Dunsey
Data Science
Faculty Advisor(s): Dr. Sarah Dumnich

We created a model to predict the number of goals that the Pittsburgh Penguins will score in a specific game, based upon several variables that measure the Penguins' recent performance, as well as their recent performance against the specified opponent. A model like this could be used for the purpose of sports betting, an emerging cash-cow enterprise. By being able to predict the number of goals the Penguins will score in an upcoming game, individuals placing bets and those who set the betting lines, could both benefit from the model's predictions

Using Machine Learning Algorithms to Reduce Marketing Campaign Costs

Marie Matt, Abigail Schwartz
Data Science
Faculty Advisor(s): Dr. Sarah Dumnich

Our project aims to assist a superstore in reducing marketing costs for their year-end gold membership initiative. For this initiative, they plan to launch a new offer that is a gold membership - that has the benefit of 20% off of all purchases. The gold membership will be offered at a discounted price during the year-end sale and will only be offered to existing customers. The campaign consists of phone calls to existing customers. The superstore wants to use a model in order to predict the likelihood of a customer enrolling in the gold membership. Management will be the ones most interested in the results of the model since they will be using the predicted probabilities to decide which customers to target. There are 22 variables and several machine learning algorithms which will be considered to create the best possible model for these predictions.

Identifying Opportunities of Active Management Using Cross-Sectional Standard Deviation & Correlations

Jordan Sabol, Curtis Schrack, Conor Keating
Business Data Analytics
Faculty Advisor(s): Dr. Justin Petrovich

Active management in the finance industry is an approach that may assist in finding success or failure during periods when the dispersion of returns is high among stocks within an index. Looking at this spread of returns along with the correlation between individual securities, advisors can find "signal periods" where dispersions are high, and correlations are low. Using the daily returns of individual stocks within different indexes, we

have created a program that calculates the cross-sectional standard deviation & correlations to identify when opportunities for "active management" are trending up or down.

Small Market, Big Challenge: Using Modeling to Increase Pittsburgh Pirate's Fan Turnout

Mason Seftas, Derek Hald, Jacob Polosky
Data Science
Faculty Advisor(s): Dr. Sarah Dumnich

The purpose of our research is to analyze the Pittsburgh Pirate's attendance from the last ten years to predict their attendance numbers for this upcoming season. These findings will be very beneficial for many MLB teams, as low attendance has become a significant problem for small market teams over the last several years. We plan to solve this problem by combining several factors such as importance of the game, weather, opponent, time of day, etc. so that we can most accurately predict attendance. By comparing these variables and analyzing how much each one impacts attendance, we can identify the factors which teams can focus on the most to increase attendance. Ideally, teams would use this insight to make attending games more attractive and focus marketing efforts to boost the number of fans at games that are projected to have low attendance.

Business Data Analytics Capstone Project - Predicting Future Returns on Funds

Zachary VonStein, Antonio Ferraro, Isaac Little
Data Science
Faculty Advisor(s): Dr. Justin Petrovich

The goal of this project is to create a predictive model based on economic conditions and previous fund performance, that will be used to forecast changes in fund peer percentile rank in terms of annualized returns over various time periods (i.e., 1, 3, 5, and 10 years). This will provide the opportunity to identify and prepare for periods when a fund may significantly improve or decline in return rankings. For the project we will be using a fixed effects model using R Studio.

Mental Health Problems and Criminal Tendencies Linking to Drug and Alcohol Abuse

Logan Carns
Criminology, Law and Society
Faculty Advisor(s): Dr. Kayla Jachimowski

The purpose of this paper is to describe the mental health problems and criminal tendencies that link to drug and alcohol use. Alcohol and other substances affect responsiveness and changes in behavior during a task. Related criminal related behavior include drug abuse, antisocial behavior, psychopathy, delinquency, mental health, recidivism, and homicide. The literature focuses on the mental health problems that link directly to drugs or the category of a drug. The drug categories that are used today by professionals include depressants, stimulants, hallucinogens, dissociative anesthetics, narcotic anesthetics, inhalants, and cannabis. Criminal tendencies that stem from one's obsession with drugs is known as addiction. With theory, Rational Choice Theory is the assumption that behavior of individuals stems from their self-interests, the reason one makes a decision will be covered. Rational choice theory defines a person's actions to be centered around their own interests and one's understanding of self-benefit. Drug abuse gets people in trouble with the law and leads toward more crime. Examples of problems from drug abuse include poor relationships, health-related problems, academic difficulties, and involvement with the criminal justice system. Numerous resources are available including substance abuse treatment programs and rehabilitation programs.

The Impact of Antisocial Personality Disorder on the Criminal Justice System and Criminal Recidivism

Allyson Foster
Criminology, Law and Society
Faculty Advisor(s): Dr. Kayla Jachimowski

This project seeks to research and discuss the topic of psychopaths within the American criminal justice system. Most specifically, it desires to learn more about the high recidivism and parole rates for said criminal psychopaths by means of a literature review. Furthermore, it suggests potential policy changes to rectify this problem using classical criminological theories and current policy in place. In this paper it has been found that psychopathy is a form of Antisocial Personality Disorder characterized by a lack of emotionality, impulsiveness, and more. These psychopaths make up approximately 16% of all males in the criminal justice system. Using Rational Choice Theory, it should be considered that individuals with this controversial definition cannot be entirely rational. They often manipulate parole boards into being released early, leading to them reoffending in their desires to achieve their goals. Overall, criminal psychopaths have a significant impact on the American criminal justice system that needs to be studied more and corrected.

Mental Health Disorders and Substance Abuse: The Importance of Dual Diagnosis Recognition

Daulton Riddell
Criminology, Law and Society
Faculty Advisor(s): Dr. Kayla Jachimowski

Individuals who have both a mental health disorder (MHD) and a substance abuse disorder (SUD), are referred to as having a dual diagnosis or a co-occurring disorder. Individuals with dual diagnosis are often not properly recognized and therefore go undiagnosed and untreated. This lack of recognition and proper treatment impacts not only the individual, but also negatively impacts their family and society. This research focused on individuals suffering from dual diagnosis disorders and why society struggles to recognize and treat these individuals. Underlying risk factors for MHDs and SUDs will be explored by utilizing current scientific discoveries, biopsychosocial models, and Agnew's general strain theory to explain how these disorders arise. Suggestions for policy changes and currently available legislation and treatment programs will be discussed.

What affect does addiction have on crime/violence?

Anthony Tagliati
Criminology, Law and Society
Faculty Advisor(s): Dr. Kayla Jachimowski

This project seeks to research and discuss the effect that addiction has on crime/violence. Crime has long had a correlation with drug and alcohol addiction; however, the frequency of this interaction continues to increase. Non-violent and petty crime is often associated with substance use and abuse issues. Whereas economic crimes, such as burglary and theft, are the main type of crimes that correspond with addiction. These addiction problems can be damaging to the community and the people. The use of Rational choice theory and Incentive-Sensitization Theory can help link addiction with crime. Rational Choice Theory II states that the criminal's actions are deliberate and are committed with full intention to benefit the criminal. Addiction can cause people to commit actions that they would not otherwise do if they weren't driven by addiction.

Haikus and Cake

David Collins
English
Faculty Advisor(s): Dr. Dennis McDaniel

Over the course of the past two summers, I have attended over 100 weddings, working on the catering staff at Phipps Conservatory in Pittsburgh.

Beyond simply learning the dos and don'ts of the I dos, I haven't been able to help but to engage in observation about the nature of weddings and the promulgation of love.

The lyrical irony of wearing high heels in just to carry them out in hand. Of wearing ties around the neck on the way in just to wear them out around the head. Weddings with the power to transcend geographical, ideological, political disparity, even just for a night.

I've been cast as an ephemeral extra in these indefatigable transactions, a part of something that will last forever. The world is ever-changing and ever-evolving, but what we are celebrating are these enterprises that don't abide by change- fishing lines cast into a vast sea of impermanence that latch on to a small resistance of finiteness, making the uncertainty of change and the vicissitude of everyday undertakings more manageable and more our own.

These findings and more comprise "Haikus and Cake"- a philosophical creative nonfiction piece about love and hope and change and permanence and expectation and celebration and people. This project also takes the form of a documentary, entitled "See ya Cater" (like see ya later, but with cater).

Liberate Yourself: Dump the Diet

Kyra Lipetzky
English
Faculty Advisor(s): Dr. Sara Lindey

This paper will detail observations concerning the ways in which women navigate modern culture within the book Dietland, by Sarai Walker. Throughout this tale of self discovery and acceptance, alongside the turmoil surrounding society as characters transform with it, weight loss culture hovers in the background, a perpetual nuisance. Dietland flips this industry on its head, challenging preconceived notions that women try to conform to. Addressing the reality of society's view on differences, especially obesity, this book is an exaggerated representation of what could counter prejudicial norms, bringing into stark contrast the hypocrisy and irrationality that surround women's lives. This paper will analyze the impacts that key female figures create alongside their interaction with their own identities of womanhood. A violent form of revolt, Jennifer, although simultaneously a single person as well as a movement, is the ultimate female figure of resistance in the novel. Through fighting the marginalization, the oppression, the objectification, and the abuse of women, Jennifer frees women to make their own choices. Others find liberation through the act of blending in, or choose to discover the various freedoms that come with awareness while struggling to choose between the available options due to an accustomization to the lack of choice.

Oral Session One: 2:45pm-4:00pm
E106
Liberal Arts

Adolescents Well-Being: A Look Into the Effects of Society and Technology

Morgan Domer (Nutter)
Liberal Arts
Faculty Advisor(s): Dr. Eric Mohr

For the 2023 Academic presentation, I will be presenting on a look into adolescents well-being and how society and technology affect it. Mental and physical health of teens are declining significantly due to many factors rising in their lives. Adolescents have had a rapid rise of stress and anxiety levels and understanding why and how to help them is important. Factors such as COVID 19, higher divorce rates, and rising economy factors are just a few of the many stresses placed onto teens. Focusing on limits of screen time is one main way we can help these teens to decrease physical and mental factors researchers are seeing in teens.

College Athletes and Self-Disclosure

Frankielynn Retort
Liberal Arts
Faculty Advisor(s): Dr. Eric Mohr

This project is about how college athletes handle their self-disclosure and how it affects them. In this I talk about how it affects their mental health by holding their emotions and feelings in. I also talk about why athletes hold what they are feeling inside in and why. In it I mention who the athletes are more likely to go to, to talk about their feelings and why as well. It is unhealthy for an athlete to feel like they can not talk about how they feel because it affects them on and off the field. I also give an example of a professional athlete Simone Biles and what she went through when she was younger and why she finally self-disclosed and started to talk about her situation. I also found research on self-disclosure and how it intertwines with sports psychology. In the project I also added in some disorders that the athletes can develop or form from not being able to self disclose. All together the research is about why a college athlete should be able to be open about their emotions and feelings and not have fear of holding them back for certain reason that I talk about in the project.

Oral Session One: 2:45pm-4:00pm
E106
Liberal Arts

Bringing awareness to Sanfilippo Syndrome: Educating one mind at a time to find a cure

Shelby Stoner
Liberal Arts
Faculty Advisor(s): Dr. Eric Mohr

Sanfilippo Syndrome affects 1 in every 70,000 children each year and not many people know what this is. My research was done to compile information about what the disease is including the 4 different types and how it affects the patients in their life. I also discuss the life expectancy of these patients, the physiology of the disease, the degeneration process, the physical and mental issues that arise from this disease, patient care, treatment options, the life of a caregiver, and how we as a whole can bring awareness and find a cure. Sanfilippo Syndrome currently has a 100% mortality rate, but if we all take a little bit of time to learn about this disease and help bring awareness and find a cure we can change this outcome.

Steelhead Trout and their migration in and out of Lake Erie's Tributaries

Jordan Stranko
Environmental Science
Faculty Advisor(s): Dr. Eric Mohr

In this presentation we discover the "how" and the "why" of the migration of Steelhead Trout in and out of Lake Erie's tributaries located in northern Pennsylvania. We will also explore their needs for survival once they make their way into the tributaries, including diet, water temperature, and the fishermen that fish for them. Their journey from just little 10-12 inch trout, to their adult size of 20-30 inches is a complex topic that I hope will spark interest in individuals that seek to learn more about their developmental process, and the means the Steelhead Trout undergo to survive and carry out the next generation of their species.

Colonial Museums in Contemporary Times: Approaches to the Decolonization of Museum Collections in the UK and US

Kelsie Patton
Public History
Faculty Advisor(s): Dr. Karen Kehoe
The Elizabeth and Tom Andreoli Traveling Scholar Endowment

This thesis explores how the modern museum is a colonial institution and ways in which this legacy can be acknowledged and perhaps turned into something more positive. Major natural history and ethnographic museums emerged in the early-mid nineteenth century amidst colonial encounters between Europeans and indigenous/minority populations. These interactions had drastic impacts on those populations, and this painful memory still lives in museum exhibits and collections where objects that have been stolen and misinterpreted remain. This thesis analyzes ways that modern museums can and have attempted to effectively decolonize, as well as ways that certain museums can improve their decolonization efforts. Topics discussed include text, labels, and statements, repatriation (or lack thereof), the special case of human remains, and the evolving ethics related to museums and cultural heritage. The outlook for an increase in decolonization efforts in the future is optimistic, though there are still controversies over what should be repatriated and how much/what side of history is being told. The purpose of this thesis is to hopefully bring attention to the topic and why it is important for museums to engage in decolonization for the benefit of their audiences and their legacy.

The Progressive Conservation Movement in Pennsylvania Environmental Education and Reforestation by Laura Horn

Laura Horn
History
Faculty Advisor(s): Dr. Karen Kehoe

Pennsylvania is known as "Penn's Woods", but the Commonwealth has a unique history with its forests. In the 19th century during the Industrial Revolution, the logging industry ran rampant and without check throughout the state. The original old growth forests that the first Pennsylvanians first discovered were cut at the roots to line the pockets of lumber barons. Even to this day, few old growth forest stands are still in existence. The ancient forests of the White Pine and Eastern Hemlock hardly remain. At the height of logging, the lack of forests created environmental disasters across the state, even contributing to such tragedies like the Johnstown Flood. A group of concerned citizens took action towards conservation of Pennsylvania's forests. Saint Vincent undergraduate, Laura Horn, sought to answer the question of how Pennsylvania conservationists were able to educate, reforest, and protect the state's woodlands. The story of reforesting Pennsylvania reflects onto our current climate crisis and substantiates just how crucial environmental education and policy are to future generations.

Pro-Choice America? Government's Limit of Women's Accessibility to Birth Control in the Late 19th to the Late 20th Century

Joslyn Rodell
History
Faculty Advisor(s): Dr. Karen Kehoe
The Elizabeth and Tom Andreoli Traveling Scholar Endowment

Women's rights have always been under threat for women have been considered the inferior gender. Their access to safe birth control has also been in question for centuries. In the United States, the government took more than a century for women to vote and even more time to allow women to have bodily autonomy, specifically birth control. Analyzing from the late 19th to early 20th century, I researched what specific government actions have limited women's accessibility to birth control. My studies spanned from the Comstock Act to Margaret Sanger to Griswold v. Connecticut to several U.S. presidents and their policies regarding birth control. Despite the numerous medical advancements and studies completed in recent history, the government continues works to limit women's access to birth control and to even overturn the landmark Supreme Court case, Griswold v. Connecticut. Throughout history, women have had a strenuous time obtaining birth control and it has become just as difficult in today's political climate. My studies aid in understanding how the government has limited women's access to birth control and it is vital in today's climate where women's autonomy and health are at risk once again.

Women with the Military during the American Revolutionary War

Kaitlyn Morrison
History
Faculty Advisor(s): Dr. Karen Kehoe
The Elizabeth and Tom Andreoli Traveling Scholar Endowment

There are three levels of historians when it comes to women's history. Level one is when historians focus on notable women and the contribution of women, level two is when historians focus on the transition of women and the separate women's culture, and level three is the synthesis and tension between male and female. Researching the levels of historiography of women within the American Revolution has provided insight in how the story of women has been told over time. In researching the women of the American Revolution an important question came to mind. What is the impact of women's participation with the military during and after the American Revolution? The military sphere was a man's world during the era of the American Revolution, but men were not the only ones participating within that sphere. While largely forgotten or hidden, women were active participants with the military throughout the American Revolutionary War helping to lead the colonists to success through their willingness to shift from traditional roles, support for soldiers, and their active military roles.

Development of a Living Chapel Prototype for the Saint Vincent College Community

Cara Luallen, Helen Kish, Matthew Byrne, Sasha Cindric, Leonel Cuello, Thomas Hedgepeth, Noah Schollaert
Engineering
Faculty Advisor(s): Dr. Derek Breid

The engineering department's senior capstone team has spent both fall and spring semesters developing a prototype of a Living Chapel for use on campus. A Living Chapel is an outdoor place of worship inspired by Pope Francis' encyclical, Laudato Si. This work encourages humankind to care for creation both in praise of God and for the good of all people on Earth. Such a space should exist on Saint Vincent College's campus in order that community members can experience God through creation and work to become better stewards of the Earth. The team developed several Living Chapel designs based on these ideals put forth by Pope Francis and selected one to be built behind Dupre as an example of what a complete Living Chapel could look like on campus. The design features sustainably powered rain curtains and a living wall. There is also seating located within the structure to allow Living Chapel visitors to contemplate the beauty of nature as God's creation. The team will be showcasing their design at the conference for people to experience and to discuss their design choices and process.

Isolationism to Interventionism: The Philosophy Behind the Foreign Policy of America

Rebekah Bollman
Politics and Political Science
Faculty Advisor(s): Dr. Jerome Foss

The United States of America has long been seen as the defender of democracy. The US foreign policy has had an evolution from strict isolationism, to global interventionism, to a seeming stand-still. George Washington in his farewell address advised Americans to keep a distance from foreign affairs as the country established itself after the Revolutionary War. Yet it was clear that the government struggled to maintain this isolationist posture. World wars led to failed isolationism attempts. After that, America found itself in several proxy wars and a nuclear cold war, eventually coming to a head with a War on Terrorism. Yet, there has existed a divide between those who see a globalist future and those who believe that America must first handle internal issues since the dawning of the American experiment. This research analyzes the philosophy behind American Foreign Policy and its evolution. It is crucial to begin to understand these relations that the United States has with other countries in order to frame discussions of how America will handle world affairs in current times.

GW Fellowship: History of Healthcare in America

Richard Pazer
Philosophy and Politics
Faculty Advisor(s): Dr. Jason Jividen

For my George Washington Fellowship project, I chose to examine the history of healthcare in America. I started by looking at FDR and his failed second bill of rights. I read people like John Dewey, Samuel Rosenman, Adolf A. Berle Jr., Father John A. Ryan, and others who were influential in how FDR thought about healthcare and governments rule in providing that care. I also read more modern take on the question such as Bernie Sanders, Barrack Obama, Charles Kesler, Cass Sunstein, Sidney Milkis and others. These authors helped me get a more complete picture of the discourse around healthcare in the US today. Overall, I feel I came away with a greater understanding of the issue of Healthcare in America and what must be done moving forward. To provide people with healthcare is to live up to the ideals of this nation.

The effects of fluoxetine and L-tyrosine on anxiety and depressive behaviors and stress hormones in caffeinated mice

Olivia Emmonds, Christopher Bouye
Biology
Faculty Advisor(s): Dr. Michael Rhodes
A.J. Palumbo Student Research Endowment

The body uses activation of the hypothalamic pituitary adrenal (HPA) axis to modulate the stress response. This activation leads to the release of cortisol in humans and corticosterone (CORT) in mice. Stress directly correlates with anxiety and depression however, treatments have been known to reduce the effects of stress and these psychiatric conditions. In this study, groups of female mice were exposed to no stress or acute stress followed by treatment with fluoxetine or L-tyrosine. The stressor was caffeine injection. Anxiety was examined through successive alleys (SA) testing, depression through sucrose preference (SP) testing, and stress through adrenal weights and fecal CORT. We hypothesized that mice experiencing stress without treatment would have increased CORT while those that were stressed with treatment would only show slight increases in CORT. We also hypothesized that mice receiving fluoxetine would show less stress than those receiving L-Tyrosine. Only the fluoxetine reduced CORT levels, and the lower CORT levels were also correlated with decreased anxiety considering mice treated with fluoxetine stayed in the brighter, riskier portion of the apparatus during the SA test. These results suggest that fluoxetine reduced CORT levels more than L-tyrosine. Overall, our study suggests that fluoxetine may be effective for caffeine induced stress.

The Effects of Nicotine and Lavender on Memory, Stress, and Anxiety Responses in Swiss Webster Female Mice

Mackenzie Moretti, Jessica Persin
Biology
Faculty Advisor(s): Dr. Michael Rhodes
A.J. Palumbo Student Research Endowment

Structures of the brain are associated with memory and their function can be altered when exposed to chemicals such as nicotine, lavender oil, and scopolamine. Exposure to these chemicals can cause the release of stress hormones which alters the size of adrenal glands and fecal pellet concentrations. We hypothesized that exposure to nicotine in mice would increase stress levels and reduce memory performance, and lavender in mice would decrease stress levels and increase memory performance. This experiment used a successive alleys anxiety test, hole board memory test, and corticosterone immunoassay to determine if nicotine and lavender oil would alter memory retention, stress, and anxiety in female mice. During memory testing, a cognitive impairing drug, scopolamine, was injected in the mice. The successive alleys test showed that the nicotine group was more stressed than the lavender group during week 3 of testing. Our hypothesis could not be supported or refuted due to insignificant findings with the control for anxiety testing. Hole board test results showed a decline in memory in all mice post-scopolamine injection; with the lavender group showing

the best memory, and the nicotine group showing the worst. The lavender group's memory pre-scopolamine improved from testing week 1 to 2. These results suggest that nicotine did reduce memory performance while lavender enhanced it.

The Effects of Sensory Deprivation on Sensory Aversion, Stress Response, and Depressive Behavior in Mice

Anna Shields
Biology
Faculty Advisor(s): Dr. Michael Rhodes
A.J. Palumbo Student Research Endowment

Loss of a sense is a major disruption to the homeostatic conditions of an organism; however, when a region of the brain is consistently neglected, neural plasticity allows for the region to be used for other neural functions. Neural plasticity increases the capacity for perception of a particular stimulus, which may heighten sensitivity. In addition, disruption in typical brain functioning may cause prolonged stress to the organism leading to overstimulation of the HPA-axis and potential increases in depressive behaviors. In this study, groups of female mice were subjected to tactile deprivation and/or visual deprivation. The control group was subjected to no deprivation. Corticosterone and depressive behaviors were measured following deprivation protocols. Sensory sensitivity was tested using a novel sensory aversion test, in which the mice chose the severity of a presented stimulus. Results showed sensory deprivation was a significant stressor, although all groups had a significant decline in depressive behaviors. This study demonstrated that different mechanisms of sensory deprivation can significantly increase stress and sensory sensitivity, particularly with visual deprivation. This study offers a novel approach for testing sensory deprivation and sensitivity which could be applied to other animal models and humans in studies of neural plasticity.

How Frequency of Lies Varies by Familiarity and Correlations Between Personality and Frequency of Lies

Emily Bosche
Psychological Science
Faculty Advisor(s): Dr. Mark Rivardo
A.J. Palumbo Student Research Endowment

Several studies have suggested that familiarity and personality influence lying behavior. In addition, incentive type may increase motivation and performance for certain tasks. The present study measures how a participant's frequency to lie and magnitude of their lie varies by their familiarity with me when in pursuit of a monetary incentive. Participants completed an online Qualtrics survey in-person, including a familiarity measure and measures of agreeableness and conscientiousness from a revised version of the Big-Five Inventory. Then, participants rolled a die three times and were asked to report the number of their first roll in return for that number of tickets in a raffle for a monetary prize. Participants did not know that their die rolls were being video recorded. The magnitude of the lie was the recorded roll minus the reported roll. A one-way between-subjects ANCOVA showed that the magnitude of a lie did not vary by familiarity; $F(2, 90) = 1.07$, $p = .348$. Neither agreeableness; $F(1, 90) = 0.03$, $p = .857$, nor conscientiousness; $F(1, 90) = 2.18$, $p = .143$, were significant covariates. For the participants who lied, the frequency of lies did not vary by familiarity; $\chi 2$ (2, $N = 9) = 2.16$, $p = .339$. Future research is needed to understand how the frequency and magnitude of a lie varies by familiarity in addition to how personality predicts the magnitude of a lie.

Portrayals of Autism and the Magnitude of the Third Person Effect

Emilee Nedz
Psychological Science
Faculty Advisor(s): Dr. Mark Rivardo
A.J. Palumbo Student Research Endowment

Previous research has found that negative media portrayals of mental health disorders are common and associated with attitudes toward mental health in the real world. However, many people believe that the media have more influence on others' attitudes than their own; this phenomenon is known as the third person effect. In this study, I explored the relationship between experience with Autism and the magnitude of the third person effect. The purpose of this study is to find whether people who have personal experience with Autism are more likely to believe that they are unaffected by media depictions of Autism. I also intended to find if people who believe they are less influenced by media have fewer negative attitudes about Autism. 152 students and alumni from a small liberal arts college in Southwestern Pennsylvania completed a survey that included items about their experience with Autism, six items about the third person effect, and the Autism Stigma and Knowledge Questionnaire. Participants believed that positive portrayals of Autism had more influence than negative portrayals or media in general. They also believed themselves to be less influenced by the media than others. The difference in media influence between themselves and others was strongest when assessing negative portrayals.

Age, Authoritarianism, and Attitudes Towards Mental Health

Sophie Steiner
Psychological Science
Faculty Advisor(s): Dr. Mark Rivardo
3-Minute Research Pitch Competition Winner

Mental illness stigma has been thoroughly researched over the years. Less research has been done on how to predict mental illness stigma, specifically on how to predict who is more prone to stigmatizing mental illness. Previous findings have indicated potential predictive power of authoritarianism and religiosity when looking for mental illness stigma. Both authoritarianism and religiosity have been shown to increase with age. To look for a direct relationship between age and mental illness stigma, participants across a large range of ages will be surveyed regarding their authoritarian beliefs, religious beliefs, and their tendency to stigmatize mental illness. Additional potential predictors, such as familiarity, diagnosis, and socioeconomic status were also looked at. The results of a stepwise regression indicate that age is a significant predictor of mental illness stigma. These findings could be due to both the changes in the relevance of, and attitude towards, the topic of mental illness that have occurred within recent decades.

Oral Session Two: 4:15pm-5:30pm
E102
Statistics

America's Favorite Pastime

Joseph Burke
Mathematics
Faculty Advisor(s): Dr. Sarah Dumnich

Every year, media and fans try and guess what their favorite baseball player's batting average is going to be at the end of the season. My goal was to create a regression model that would predict batting average for the 2023 Major League Baseball season using various statistics from the 2022 season. The model was trained and tested in various stages, so that the accuracy of the model is as precise as possible.

Predicting Georgia Home Prices: A Model for Real Estate Investment and Consumer Decision-Making

Logan Goblesky
Mathematics
Faculty Advisor(s): Dr. Sarah Dumnich

I created a model that predicts the listing price of homes in Georgia, based on different features that each individual home has. The goal of the model is to be accurate enough to be deployed for use in the real estate industry. This would allow investors to include features that have a high return on investment in a specific area. Consumers, on the other hand, can use the model to check the pricing of a listing, to see how fairly it is priced based on the features and values of other nearby homes. The inspiration for my project comes from my personal interest in building a portfolio of long-term real estate investments, between flipping and selling, and holding and renting.

Do the Best Cameras Really Cost the Most?

Stefanie Livelsberger
Mathematics
Faculty Advisor(s): Dr. Sarah Dumnich

When buying products, we usually want to know what we are getting and how to acquire it for the best price. This idea is applied specifically to cameras in this project. I created a regression model to determine how different variables are related to a camera's price. These results can be helpful to understand what comprises the cost of a camera. This model shows the importance of different camera qualities to the overall cost of the camera to demonstrate the importance of getting what you need in a specific camera at a reasonable price.

Fish Market Model

Trinity Miller
Mathematics
Faculty Advisor(s): Dr. Sarah Dumnich

This data set is a record of 7 common different fish species in fish market sales. The goal of this project is to demonstrate the relationships between different characteristics of a fish and its weight. Using visualizations, I was able to show how these relationships vary depending on the species of the fish, and I was able to measure these differences through a regression model. These relational differences may be interesting to biologists or to those in the fishery industry. For example, a fisherman that might want to know the weight of a fish they are catching or size in order to use the correct kind of net.

Predicting the Subscriber Counts of YouTube Channels

Matthew Stehnach
Mathematics
Faculty Advisor(s): Dr. Sarah Dumnich

My goal for this project is to identify different things that one could do to increase the number of subscribers for their YouTube channel. In order to make this possible, I created a regression model to predict the number of subscribers that different YouTube channels have. The main predictor variables that I will be looking at for creating this model include the categories of YouTube channels, the average number of videos that YouTubers upload on their channel per month, and the average number of views that YouTubers get on their channel per month.

The link between general health and emotional well-being

Antonia Sunseri
Mathematics
Faculty Advisor(s): Dr. Sarah Dumnich

Kinesiologists have long believed that an individual's emotional well-being can impact their general health dramatically. For my project, I made a regression model that predicted someone's general based on their emotional well-being. To measure emotional well-being, I used 5 variables: the mental health of an individual along with their difficulty being alone, the amount of emotional support received, satisfaction with life, and the ability to remember, concentrate and/or make decisions. Thus, this model shows the relationship

between general health and emotional well-being. This model could benefit psychologists as well as medical doctors and Kinesiologists.

Bring In the Southpaw

Sean Talbot
Mathematics
Faculty Advisor(s): Dr. Sarah Dumnich

The main goal of this project is to create a model that predicts the Earned Run Average (ERA) of MLB pitchers for the 2023 season. Visualizations were used to analyze relationships between predictor variables and future ERA. A regression model was then created to show these relationships. Since there was so much variance in the data itself, predicting an outcome over 6 months away with high variability was not easy. However, I was able to make inferences to determine which variables were the most statistically significant to predict future ERA. I plan on using this model to make predictions about ERA for the 2023 season.

The Beautiful Game: Is it Actually Simple?

Matthew Wilkinson
Mathematics
Faculty Advisor(s): Dr. Sarah Dumnich

How do you win a soccer game? To most people, the simple answer lies in scoring more goals than the other team. While this is obviously true, is this really all there is to it? No, rather there is far more going on behind the scenes. To try and get a grasp on what these things are I created a regression model which predicts the number of wins for a given team. Currently, coaches and players are all too absorbed in just aiming for oversimplified statistics and missing the bigger picture. Thus, through this presentation, I intend to demonstrate to you the necessity of other seemingly less important statistics, which if focused on, can be of great assistance to an overall gameplan.

The Design of a Living Wall Irrigation System

Collin Frydrych, Alek Gmuer, Anthony Vanderelli, Christian Ciecierski
Engineering
Faculty Advisor(s): Dr. Derek Breid

A living chapel is an architectural landscape which tries to bring religion and caring about the planet together. Some of the key goals of living chapel are to increase spiritual and ecological awareness. A living chapel is already present in Rome, and the Senior Capstone team wants to build one at Saint Vincent College. One key element of a living chapel is the living wall. The living wall helps promote sustainability and thoughtfulness about the planet, while also adding to the scenery during worship. This design team has been tasked with constructing an irrigation system for the living wall portion of the Living Capel. The Capstone team along with Father Fred have outlined the goals for the project. After initial research and further discussion, it has been determined that our irrigation system must be sustainable, cost efficient, adaptable, and energy efficient. This led to the development of 4 main designs, Drip system, Passive Flow, Sprinkler System, and Fast Flow. Following evaluation of each design, the team developed one last design, the Passive Flow Drip System, which will best encompass all of the key objectives and fulfill the requirements of helping the Senior Capstone Team build a Living Chapel at Saint Vincent College.

Designing a Living Wall to be Incorporated into the Saint Vincent Living Chapel Capstone Project

Bradley Hallick, Victoria Sant, Morgan Klingeman, Mark Grenchik
Engineering
Faculty Advisor(s): Dr. Derek Breid

The Saint Vincent College Capstone Team is designing a living chapel for campus, and the Weekend Warriors have been tasked with making one of the living walls for this chapel. Having done research into various aspects of plants, soil, and previous vertical garden designs the team developed multiple potential designs to present to the clients. After receiving feedback from the clients and our peers alike, the team has selected a course of action by focusing design on the Triangular Wall Design. Once the initial design was revisited to make it more feasible to construct within the remaining time period, the team gathered resources and began construction. The design was finalized to a rectangular frame so as to better integrate the wall into the chapel project. Within the frame are many triangular boxes that not only support the plant-life and provide a nice aesthetic, but also provide subtle religious themes such as the trinity into the environment of the chapel. Time constraints, budget, and availability naturally introduced complications to the project, but the team has created a living wall that provides a calm and welcoming environment that facilitates plant life and is complementary to the Capstone's Living Chapel.

Living Wall Irrigation System

Alex Hess, Hunter Grimes, Michael Fekete, Andrés Mateos Carrión, Braden Rankin
Engineering
Faculty Advisor(s): Dr. Derek Breid

Building a Living Chapel is part of a global movement to create sacred outdoor spaces. A main component of a Living Chapel includes plants, and therefore the main purpose of this project is to design and build a working irrigation system that sustains the plants of Saint Vincent's own version of a Living Chapel. The chapel will be located in the courtyard between the West and JFW wings of Dupre as designated by Fr. Fred Byrne. The irrigation system will support the variety of plants within the Living Wall, and it should be automated and able to water all plants according to their need. Our team put together three different designs for an irrigation system that were compared and evaluated. Key features of our selected design include pumping water to the top of the wall and allowing gravity to pull water down through tubing to the plants at lower levels. Our final design was selected through logistics, model building, and prototype testing, as well as the final decision of our corresponding Wall design team. The irrigation system will be incorporated in the final build of the Living Wall.

A Living Wall For a Living Faith

Sullivan Kennedy, Zachary Kutek, Fulton Fontana, Nathan Cooper, David Lynn
Engineering
Faculty Advisor(s): Dr. Derek Breid

The senior students in the engineering program at Saint Vincent College have tasked the students in Engineering Design and Lab (ENGR 240) to build a section of living wall that will be used in the Engineering Department's Living Chapel project. In line with the objectives of the Living Chapel, the living wall must be a 6' by 6' vertical structure that displays and supports plant life in a way that creates a peaceful space conducive to reflection and prayer. After having explored multiple ideas by means of brainstorming and CAD modeling, the team ultimately settled on a final design which incorporates elements from several of the team's preliminary designs. The final design incorporates multiple horizontal V-shaped wedges which run across the length of the structure holding the plants, along with a gravity powered irrigation system. The design will also feature a decorative cross covered by a trellis and vining plants, serving as a powerful visual reminder of the Catholic Benedictine values of SVC. Although other design ideas were considered, the final design was chosen for its ability to fulfill the project requirements in a simple yet effective manner which will be cherished by the community for years to come.

Oral Session Two: 4:15pm-5:30pm
E105
Physics

A Search for Radio Stars and Radio Beacons from ETI Civilizations - I

Will Mallah, Sam Bringman
Physics
Faculty Advisor(s): Dr. Daniel Vanden Berk

Few stars are strong radio sources, and the stars on the main sequence such as our sun barely emit radio waves at all. This rarity makes radio stars an interesting astronomical phenomenon to catalogue. Furthermore, main sequence stars that do not naturally emit significant radio waves would also be the most likely systems in which to find extraterrestrial life. So, finding strong radio signals from a main sequence star could be a sign of technologically advanced extraterrestrial life. In our study, we have cross-matched astronomical catalogues to match radio sources with potential optical sources to place limits on how prevalent radio stars are, which could also reveal candidates for intelligent extraterrestrial civilizations.

A Search for Radio Stars and Radio Beacons from ETI Civilizations - II

Sam Bringman, Will Mallah
Physics
Faculty Advisor(s): Dr. Daniel Vanden Berk

Few stars are strong radio sources, and the stars on the main sequence like our sun barely emit radio waves at all. So, an extraterrestrial civilization, which would most likely develop around a sun-like star, could signal Earth using radio waves because that radio signal would not be easily confused with a natural process. We cross-matched optical sources in the night sky with radio sources to find sun-like stars emitting uncharacteristic radio waves. We narrowed our search from tens of thousands of objects to a small handful of candidate stars. We will be examining the spectra of each candidate star to determine which, if any, stars could be possible homes to extraterrestrial lifeforms.

Computational modeling of X-ray attenuation and simulation of medical imaging

John Meneghini
Physics
Faculty Advisor(s): Fr. Michael Antonacci, O.S.B.
A.J. Palumbo Student Research Endowment

While the use of X-rays for medical imaging provides professionals with useful diagnostic information, the amount of radiation dosage patients receive can be more than medically necessary. In order to minimize the amount of radiation, I have created an X-ray attenuation code that can produce a simulated X-ray image of a 3D model. In order to determine the accuracy of my simulated images, I have qualitatively compared them to their associated physical X-ray images obtained from a portable X-ray machine.

The Limits of Just War Theory: An Analysis of Its Historical Development and Contemporary Challenges

Ronald Bell
Philosophy and Politics
Faculty Advisor(s): Dr. Eric Mohr

This work considers whether the concept of a just war is possible; whether justice primarily conflicts with the essence of war; and whether moral principles must adjust in times of war if war is unavoidable. It begins by laying out a basis of what just war theory is and clarifies the conflict between the essence of justice and the essence of war. Not only can there be found a clear perversion of the original idea of justice, but there can also be found that the way to interpret ethical problems concerning virtue has changed over time, almost seemingly with the way the theory has changed. The aim of this writing is to demonstrate that the current just war theory is not supported by virtue ethics. The major conflict is what we know as the essence of justice and what we know as the essence of war. The findings of this work show that a reasonable rehashing of our understanding of how war can be virtuous is the first step towards proper applications of justice and understanding of just war theory.

Enquiry into the Notion of Categories in Aristotle and Kant

Jacob Holleran
Philosophy
Faculty Advisor(s): Ms. Jessica Jones

In this thesis I drew out a description of the notion of "Categories of the Understanding" in the work of Aristotle and Immanuel Kant, showing what was meant by the term, how they were derived (speculatively in the case of Aristotle and exegetically for Kant), and what metaphysical implications followed from their adoption. Then, I offered a critique of each of their notions, and provided a sketch of my own philosophical position with reference to this question, trying to show that categories are ultimately fallibilistic and conventional due to the limitations of the human intellect.

Oral Session Two: 4:15pm-5:30pm
E106
Philosophy

Life, Liberty, and Healthcare

Richard Pazer
Philosophy and Politics
Faculty Advisor(s): Dr. Eric Mohr

My project was examining the issue of healthcare as a civil right as a matter of justice. I start by looking at the history of the right to life in Philosophy. I continue by looking at what rule does life and bodily health play in a life of dignity. I examine John Rawls's "Theory of Justice" and Martha Nussbaum's "Capabilities Approach." I then look at how we infer civil rights from natural or human rights. Then I explore the state's role in this realm of respecting life and a life of dignity as a matter of social justice. And finally I look at what we can do and why now is a crucial moment in history to do something. All throughout the paper, I attempt to show why a system built for profit is unjust and why we need a system that focuses on people's health to promote justice. I give my own account as an example of someone who had their dignity respected by the state and try to show that not everyone is as lucky as me. But if we want to live up to the ideals of our nation healthcare must be a civil right.

Oral Session Two: 4:15pm-5:30pm
E108
Public History

A Walk through the Grove: The Work of the Practicum in Public History

Nathan Lozano, Joel Martirano, Gage Morrison, Andrew Connelly, Joshua Canty, Abigail Bashioum
Public History
Faculty Advisor(s): Dr. Karen Kehoe

Public history is the use of historical skills and methods outside of traditional academic history. The Practicum in Public History asked us to undertake a project exploring the history of Saint Xavier Academy and presenting that information to the public. Our main goal as public historians was to create an awareness about the local history of the institution. Partnering with the Westmoreland Land Trust, we worked to locate articles, books, and documents about the Sisters of Mercy who founded the school, the land the school occupied, and the school itself. This work will result in a number of public history presentations including a physical exhibit that provides a deep focus on local Westmoreland history and how the Sisters of Mercy religious order provided a service while leaving behind a lasting legacy that has been respected ever since. Unfortunately, a fire led to the closure of the Academy in 1972. In order to show respect for those who spent time working at or attending the institution, we are also planning an oral history of the school. Our conference presentation will provide insight into our methods and a discussion of the work completed, the work in progress, our decisions about how to present the information and the challenges of working with a real world partner.

The Royal Shakespeare Company

Therese Oldenburg, Mila Kalcevic
Faculty Advisor(s): Dr. Dennis McDaniel

This presentation will focus on the Royal Shakespeare Company based in Stratford-upon-Avon, London and founded in 1961. During the Shakespeare in London course, students traveled abroad to London, England to learn more about the most iconic writer in the history of the English language. Prior to the trip, we read three popular plays: Richard II, Titus Andronicus, and Romeo & Juliet. These plays are still performed today by the Royal Shakespeare Company in Shakespeare's hometown and resting place of Stratford-upon-Avon. It is within walking distance of the Guild Chapel where a young Shakespeare attended school, and Holy Trinity Church where he would then be buried. The town is of great historical significance, attracting tourists from across the world, and the Royal Shakespeare Company brings this history to life.

A Look at the History and Design of Shakespeare's Globe Theater

Angel Scalamogna, Victoria Viola
English
Faculty Advisor(s): Dr. Dennis McDaniel

This presentation provides a comprehensive examination of the history and design of Shakespeare's Globe Theater. We explore the factors that influenced the creation of the original Globe, the challenges faced during its construction, and its impact on the development of theater in Shakespearean England. Additionally, we analyze the design elements of the Globe, including its stage, seating arrangements, and acoustics, and their significance in shaping the theatrical experience. By providing a detailed overview of the Globe's history and design, this presentation aims to deepen our understanding of the evolution of theater and its lasting legacy.

Impact of Westminster Abbey

Michael Waros, Gage Mortimer, Dustin Logue
English
Faculty Advisor(s): Dr. Dennis McDaniel

The research presentation looks into the architecture of Westminster Abbey as well as its cultural and historical impact on England throughout history up to the modern day. The presentation was researched by visiting the Westminster Abbey in central London and learning about the church through a well informed tour guide, as well as online academic research. The presentation will cover construction of the abbey, the architecture used in construction, the history of Westminster Abbey up to the modern day, what makes Westminster Abbey important culturally and why it is important culturally. The viewers after the presentation should be well informed on Westminster Abbey and its impact on England and later on the United Kingdom.

Engaging Communities within Writing Centers

Steven Kenderes
English
Faculty Advisor(s): Ms. Mallory Saylor

Writing center pedagogy and knowledge is ever-changing. Among countless writing center theories, philosophies, or styles of teaching, there's an especially common idea: the center must maintain the balance of hierarchal power within a tutoring situation. The writing center should support students' own writer's voice and identity. The diverse collegiate settings of languages, dialects, and writing styles must be protected within the writing center, while being balanced with standard English practices. Writing center peer consultants are the backbone of a writing center; they are the basis at which the various center philosophies may play out. It is up to the consultant after all. As a future writing consultant, a writing center consultation should consist of collaboration between equals: consultant-consultee. Consultation sessions can be personal and include conversation. The writing center is a place of guidance that offers externalized knowledge that all writers can apply. Overall, the writing center must maintain its ability to procure knowledge from a writer while having the availability of consultants who can guide writers to their best work.

Writing Consultation Philosophy: Balancing Collaboration and Instruction

Delaney Fox
English
Faculty Advisor(s): Ms. Mallory Saylor

There have been many studies on the effectiveness of various approaches to writing tutoring. This paper explores the benefits and drawbacks of a collaborative approach versus an instructive approach in consultation and how balancing the two makes tutors uniquely suited to serving a diverse group of students. Collaboration encourages students to find and correct errors by themselves with the prompting of a tutor, usually through questions. Alternatively, instruction has tutors take the lead, pointing out corrections like a teacher might. This paper argues that both are beneficial depending on student's needs; consultation's importance lies not in a specific method but in ensuring students are able to break out of comfort zones and externalize their work. Externalization, separating the work from the writer, allows students to see how their words might be interpreted by an outside audience, which can then help them to better communicate their ideas. Additionally, a tutor enrolled in a peer writing course, such as Advanced Writing, is well-suited to help students share their writing, as they have the different approaches, critical techniques, and habituation to reading others' works. Essentially, successful writing consultation stems from tutors' ability to find the collaboration/instruction balance that best encourages students to share their writing and learn how to improve it.

Collaborative Writing Consultation

Carter Cavalier
English
Faculty Advisor(s): Ms. Mallory Saylor

The writing process can be a challenging and overwhelming experience for many students, often leading to anxiety and stress, however, collaborative writing consultation provides a way to transform this experience into an empowered journey. This highly effective style fosters a balanced power dynamic between the student and tutor, encourages active learning through dialogue and critical thinking, and ultimately leads to a higher quality of writing. Collaborative consultation includes an open dynamic where both the student and tutor share their thoughts and ideas, actively creating a supportive environment that prioritizes the student's goals, interests, and concerns. This active engagement in the writing process also allows students to take ownership of their work, ask questions, and seek clarification, encouraging the tutors to provide personalized feedback and constructive criticism to help the student improve their writing skills. Through the collaboration approach, students can further develop their writing ability, and gain a better understanding of the writing process.

Peer Tutoring in the Writing Center: Authority over Motivation

Gabriel Seevers
English
Faculty Advisor(s): Ms. Mallory Saylor

There is a flaw in peer tutoring within the writing center. Too often have I encountered tutors who take too much of an authoritative space in the session and take more control over the tutee's paper than should be required or expected. This leads to the paper's voice shifting from the writer's to the tutor's. This is the fatal flaw of tutoring in the writing center. Certain points and strategies taught to tutors to aid their consulting sessions remove the tutee's power over their writing. Overpowering a tutee's voice can also be extremely demoralizing and cause a writer to lose motivation, as they see their work picked apart and scrutinized before it ever reaches their professor/teacher. I've had personal experience with this and can see how certain strategies and wording in parts of tutor strategies can lead to this 'power creep,' even if the tutor intends to keep the control in the hands of the writer.

Analyzing the Physiological Effects of ALDH2*2 Knockdown Zebrafish using CRISPR/Cas9

Sarah Helsel
Biology
Faculty Advisor(s): Br. Albert Gahr O.S.B.
A.J. Palumbo Student Research Endowment

Aldehyde dehydrogenase 2 (ALDH2) is an enzyme, centralized in the mitochondria and responsible for the breakdown of aldehydes, including acetaldehyde, an intermediate in the pathway of ethanol metabolism. Human ALDH2 deficiency, commonly called “Asian Flush Syndrome” or “Asian glow,” is accompanied by a red flushed face, nausea, increased heart rate, dizziness, and vomiting. Using the CRISPR/Cas9 system, the following study attempted knockdown of the ALDH2 gene in Danio rerio. Treated zebrafish were exposed to ethanol and/or Alda-1, a synthetic chemical known to increase enzyme activity, and behaviors were monitored. The ALDH2 knockdown fish showed changes in latency to enter the top and freezing bouts identified using a novel tank test. Phenotypically, knockdown fish showed behavioral changes consistent with Asian Flush. Potential alteration of antioxidative gene expression indicates increased reactive oxygen species modulation in the knockdown fish. These data indicate potential for further study on ALDH2 activity using this model.

The Effects of Geographical Location on Tolerance of Humans as Observed in the American Crow (Corvus brachyrhynchos)

Kari Fenner
Biology
Faculty Advisor(s): Dr. James Kellam

Geographical location plays a large role in an animal species’ tolerance of humans and can be observed causing differences in behavior. It can be said that American Crows that live within an urban area, demonstrate a greater tolerance for humans as compared to those that reside in rural areas. I tested this hypothesis, in which crows were observed in two locations: one in a suburban neighborhood (Hilltop Dr. in Lower Burrell), and another that offers an ecosystem with wetlands, lots of trees, and an agricultural field (the Gristmill at Saint Vincent College). Crows at these locations were provided with unsalted, shelled peanuts placed on the ground or on a wooden platform. Response time (in minutes) to peanut placement was noted as crows approached peanuts by flying towards them, entering the location after placement, or not approaching the peanuts at all. The results statistically indicate that crows residing at Hilltop Dr., being in proximity to Pittsburgh, had shorter approach times to peanut placement as compared to the crows at the Gristmill. These crows were more tolerant to human-provided food sources. Although this study only scratches the surface of understanding the relationship between humans and animals, it provides insight on a factor that seemingly influences animal behavior.

Effects of commercial probiotic on chicken embryo immune response when challenged with poly (I:C)

Ava Dorazio
Biology
Faculty Advisor(s): Br. Albert Gahr O.S.B.
A.J. Palumbo Student Research Endowment

Excessive use of antibiotics in the poultry industry promotes the proliferation of antimicrobial-resistant pathogens. Probiotics have been proposed as a means of increasing the production of host defense peptides (HDPs) thereby diminishing the necessity of antibiotics. This study examined the ability of probiotics to prime the immune systems of embryonic chicks for a viral threat, modeled with polyinosinic-polycytidylic acid (poly (I:C)). Real-time PCR was completed to assess expression of five immune-related genes in the spleen: TLR-3, AvBD-2, IFN-α, IFN-β, and IL-6. In the chicks that received the probiotic treatment, TLR-3 was downregulated ($p=0.0013$) and AvBD-2 was upregulated ($p=0.0105$). The expression of IL-6 trended towards downregulation ($p=0.06$) with a potential interaction between the probiotic and poly (I:C) treatments ($p=0.0794$). The probiotic treatment increased production AvBD-2 indicating the chick's innate immune system was enhanced thereby accomplishing what had been theoretically proposed. These results suggest the increase HDP expression is occurring through immunomodulation pathways that have not been fully elucidated.

Population Genetics and Wing Variation in Spotted Lanternfly Populations in Western Pennsylvania

Clare Mulcahy
Biology
Faculty Advisor(s): Dr. Michelle Duennes
A.J. Palumbo Student Research Endowment

The spotted lanternfly is an invasive insect that was first found in the United States in 2014 and has since spread to at least forty-five counties in Pennsylvania, and at least ten other states. Spotted lanternfly invasion is extremely costly due to the control measures necessary to slow their invasion and the damages they inflict upon agricultural crops. An investigation of spotted lanternflies' morphological and genetic diversity in Western Pennsylvania is expected to reveal low genetic diversity; diversity is expected to be highest near transportation hubs or in Berks County, where spotted lanternflies were first found in the United States. To quantify the genetic diversity of Pennsylvanian spotted lanternfly populations, I used PCR to amplify microsatellites for samples taken in Pennsylvania and New Jersey, and imaged wings for analysis of vein patterns. Further study of population genetics of spotted lanternflies across Pennsylvania may reveal areas of higher genetic diversity and potential areas of focus for pest management efforts.

1. Cookies, Cleaning and a Lifespan of Experiences: Creating Competencies in a Variety of Fields

Elayna Borger
Bearcat BEST
Faculty Advisor(s): Mrs. Amy Hildebrand

The skills I have developed through my internships and externships such as cleaning, food prep and working with people of all ages has prepared me for many jobs I may work after graduation.

2. From Cleaning to Cookies to Children: Broad- Based Vocational Experiences Build

Caitlin Brinton
Bearcat BEST
Faculty Advisor(s): Mrs. Amy Hildebrand

My job experiences have helped me develop many skills needed to work after graduation. My experiences include cleaning at the SVC library, food prep at The Shack and Parkhurst Bakery, printing at Laurel Valley Graphics, and assisting children at Ligonier Valley Learning Center. These jobs have helped me gain independence and the skills needed to gain competitive employment upon graduation.

3. Stocking and Sweeping: Working in Retail and Housekeeping to Develop a Robust Set of Skills

Abigail Diveglia
Bearcat BEST
Faculty Advisor(s): Mrs. Amy Hildebrand

Over the last 3 years I have acquired specific skills in the workplace for various fields of work. I have learned cleaning skills, skills needed in an office setting, organization, and customer service skills. I have learned these skills through my work in the McKenna Office, FMO Library, SVC Bookstore, Salvation Army and the Hampton Inn, and those are the skills I have gained.

4. Stocking Food & Stacking Foam: Gaining a Wide Range of Skills in Grocery Retail and Manufacturing

Paul Fiesta
Bearcat BEST
Faculty Advisor(s): Mrs. Amy Hildebrand

This project explains the vocational experiences I've had at Bearcat BEST. I worked for FMO at the Carey Center, the SVC Fitness Center, the SVC Shack, Latrobe Giant Eagle, and Keystone Foam. I have learned many skills to help me gain competitive employment after graduation.

5. Barista & Beds: Developing Skillsets in a Coffee Shop and in Transportation in a Hospital Setting

Cassidy Galembush
Bearcat BEST
Faculty Advisor(s): Mrs. Amy Hildebrand

During my 3 years in Bearcat BEST, I have built a wide range of vocational skills such as customer/patient service, cleaning, organization, and independence. I have completed internships at SVC Public Relations, FMO at Leander Hall, and the SVC Career Center. Additionally, I have completed externships at The Kentlee Coffeeshop and at the Latrobe Excela Hospital. With completion of these internships and externships, they have prepared me for competitive work opportunities after graduation.

6. Cleaning and Food Prep: Gaining Professional Skills Useful in Future Employment

Brandon Kaup
Bearcat BEST
Faculty Advisor(s): Mrs. Amy Hildebrand

At Bearcat BEST, I had three internships in the fitness center, the bakery and Leander Hall. I also had two externships at Giant Eagle in hot foods and stocking shelves. I have learned many valuable skills including cleaning, housekeeping services, stocking grocery products on shelves and packaging food for sale.

7. Active Versus Passive Social Media Use and Self-Esteem

Elizabeth Crockett, Ashton Norton, Melanie Noftz, Serena Chapman
Psychological Science
Faculty Advisor(s): Dr. Mark Rivardo
A.J. Palumbo Student Research Endowment

Social media is a growing aspect of today's society, and it continues to touch the lives of the human population, for better or worse. Scarce research has yet examined the relationship between the different ways in which people use social media and mental health. The purpose of our study was to determine the relationship between the type of social media use behavior (active vs. passive) and self-esteem levels. Active use behaviors refer to active engagement activities on social media, such as commenting on and liking others' posts. Passive use behaviors refer to activities on social media that involve simply browsing or observing others. Self-esteem can be defined as a subjective feeling of one's own worth, reflecting people's value and respect for themselves. We surveyed 97 primarily Caucasian undergraduate students from a small liberal arts college in an attempt to identify a relationship between these variables in order to try to close the gap we observed in the literature. Results showed no difference between type of media use behavior and self-esteem, but showed difference between gender and self-esteem, with men reporting higher levels of self-esteem than women. The findings of this study would not likely be feasible to generalize to the population, as the sample size is very small. However, they are consistent with previous results.

8. The Effects of Stereotype Threat on Reading Comprehension

Jacqueline Emery, Taylor LaVale, Lindsay Mann
Psychological Science
Faculty Advisor(s): Dr. Mark Rivardo

We conducted an experiment on the effects of stereotype threat on men and women's reading comprehension performance. The participants, students from Saint Vincent College, were recruited through Schoology posts. Of these 152 participants, 77 of them were male, 74 were female, and 1 participant was non-binary or chose not to say. Reading comprehension was measured by two GRE passages that were chosen from the booklet by the researchers (Seltzer, 2009). They were followed with three questions to correspond with each passage, which were used to measure reading comprehension. The manipulation of stereotype threat was done through a message based on random assignment. These conditions included explicit, implicit, and nullified. Participants reported their confidence and the importance of reading. We predicted that women would perform better in the explicit condition than men. Those with higher confidence were expected to perform better than those with lower confidence measures. Those with a lower perception of difficulty were expected to perform better than those with a higher perception of difficulty.

9. Effect of Cell Phone Usage on Information Retention with Distracted and Undistracted Questions

Nathan Sullivan, Logan Connelly
Psychological Science
Faculty Advisor(s): Dr. Mark Rivardo

Our main topic in this research is to see the effects cell phone usage may have on one's ability to retain information. Participants were asked to sit and watch a 14-Minute TED talk video. Participants randomly assigned to the phone condition were required to respond to 4 text messages throughout the duration of the video. These texts were at specific times. At the end of the video participants completed a 9-Question quiz and 4 survey items. Some questions (distracted) pertained to information that was presented in the video at the time when the text message responses were being composed. We expected participants in the no phone condition to score better on the quiz overall and specifically score better on the distracted questions as well.

10. Epidural Corticosteroid Injections Versus Physical Therapy: Treatment for Spinal Pain

Cara Garland
Integrated Science
Faculty Advisor(s): Dr. Caryl Fish

Epidural corticosteroid injections and physical therapy are both forms of treatment for patients who suffer from pain due to spinal problems. There are both benefits and disadvantages to each of these treatments. Patients with spinal pain are often referred to these treatments and each tend to have differing outcomes. These outcomes are examined along with the effectiveness and the disadvantages of each treatment to determine the best form for patients with spinal pain. It can be concluded that, though both are effective in the pain reduction, physical therapy tends to have a greater long-term effect on pain reduction and allows for less possible adverse effects. The decision as to the treatment plan for these patients comes down to the patient and their doctor; however, having this knowledge can be useful when determining the best options available.

11. Identification of Escherichia coli in Produce

Amanda Pugliano
Integrated Science
Faculty Advisor(s): Dr. Caryl Fish

Escherichia coli is a foodborne pathogen that causes an infection in the digestive system. This bacterium will die upon contact with heat, but fresh produce that is not cooked before it is eaten is a host for bacteria to enter the body. To avoid an outbreak, produce must be sanitized and inspected for the bacteria before it is released for sale to the public. The O157 strain of E. coli is most likely the strain found on produce that is infecting people, as it only takes a few bacteria to cause an infection. There are standard sanitization and detection methods in place, but there are hopes of improving these as they can cause harm to workers and be time consuming. In addition to reducing the number of bacteria and testing to see if it is present on the produce, it is important for companies to avoid introducing the bacteria to their crops when they are growing. This study looks at methods for irrigation, sanitization practices, and finding the best method to detect Escherichia coli in produce in large-scale packaging facilities. The current international standard is the most time-consuming method but has the lowest limit of detection.

12. The Life and Rule of Carlos V: Myths and Facts

Piper Anke
Modern & Classical Languages
Faculty Advisor(s): Dr. Juan-Carlos Rivas

History is a subject that we consider very important today. We teach it as one of the main classes in our educational system, but one topic worth discussing is how do we know if the story we are learning is true? Where does our definition of history come from? This question is certainly not an easy one to answer. The story takes time to unfold and at times, when there is no way to easily record events, things can be skewed. This can be seen especially during the Renaissance when rulers had full control over how their portraits looked and how they were perceived. One such Renaissance ruler that has been sensationalized by history is Charles V or I of Spain. Carlos V was one of the most infamous rulers of Spain, and as a result, much information and misinformation about him was spread over time. While many aspects of Charles V are well portrayed historically, there are numerous misconceptions or myths about his time as king. This is what I chose to focus on; what is true and what are simply myths created over time by the ever-shifting and ever-shaping Spanish history.

13. What is Francoism?: What was the dictatorship of Francisco Franco like?

Alejandro Martínez
Modern & Classical Languages
Faculty Advisor(s): Dr. Juan-Carlos Rivas

Francoism was a totalitarian political regime that was implanted in Spain by General Francisco Franco from 1936 until his death in 1975. This dictatorship began after a military coup against the legitimate government of the Second Republic, which led to a tragic civil war of 1936 to 1939. The victory of Franco's troops was celebrated with relief because it marked the end of the war and many people just wanted peace and normalcy to return. Few imagined that, in reality, an era of a long dictatorship was beginning that had no interest in seeking reconciliation after the humanitarian disaster caused by more than thirty months of civil war. The Franco regime was characterized by fear, political and social repression, and control of the population, both individually and collectively. This allowed the government to persecute language and culture and destroy the labor rights of the working class. The Franco regime can be divided into three stages that were the postwar and international isolation, the first opening to the outside, and technocracy.

14. Creation of Silver Nanoparticles embedded in a Pluronic Hydrogel to Investigate Antimicrobial Properties

Sara Basala
Biochemistry
Faculty Advisor(s): Dr. Steven Gravelle

Antibiotic resistance is a growing problem across the world due to overprescription, misuse of antibiotics, poor hygiene, and the lack of new antibiotics to combat microbes. This has become a hot topic in the research world, especially in wound care. One way to prevent resistance while still eliminating bacteria for wounds is through the use of newly formulated hydrogel bandages. Within these bandages are silver nanoparticles that have numerous antimicrobial effects. The purpose of this project was to create silver nanoparticles of varying sizes, develop a hydrogel that could incorporate silver nanoparticles for later release, and determine the influence of the released silver on bacteria. It is hoped that the knowledge obtained from the research on silver nanoparticle-filled bandages could reduce the need for antibiotics. Ultrasmall nanoparticles have been shown to work well in other research because of the wide range of microbial pathogens, so this research examines three ultrasmall sizes of approximately 2nm, 3nm, and 6nm. In this research project, the nanoparticles were tested against gram-negative bacteria Escherichia coli and gram-positive bacteria Staphylococcus aureus, and it was shown from nanoparticle release studies and bacterial assays that the intermediate sized nanoparticles which were about 3nm in diameter showed the greatest antimicrobial effects.

15. Investigating the Effects of Withaferin A and Withanolide A on Amyloid Beta Aggregation

Finnegan Dobosh
Biochemistry
Faculty Advisor(s): Dr. Matthew Fisher

Alzheimer's Disease (AD) is a progressive brain disorder that generally causes memory loss, difficulty completing familiar tasks, confusion with time or place, and challenges planning or problem solving. One of the primary causes of AD is hypothesized to be the buildup of the protein amyloid beta (AB) in brain. This buildup results in the formation of amyloid beta plaque, which disrupts neuronal signaling, and can even cause cell death. A possible chemical compound that can be administered at early stages of Alzheimer's to prevent this amyloid beta plaque formation may help to prevent the declining cognitive state that patients with Alzheimer's experience. Extract from the plant Ashwagandha has been experimentally shown to prevent amyloid beta aggregation. This study focused on two key chemical components that are present in Ashwagandha extract: Withaferin A and Withanolide A. Three different forms of AB were utilized: AB-40, AB-42, and AggreSure AB-42. AB-40 and AB-42 failed to provide consistent aggregation in the Thioflavin T (ThT) assay. AggreSure AB-42 showed much more consistent aggregation using this same assay. Withaferin A and Withanolide A both demonstrated some aggregation inhibition in a concentration dependent manner. More trials utilizing AggreSure AB-42 are necessary to determine how consistent this aggregate on inhibition is.

16. Not Your Disney Princesses: Powerful Women in Irish Folklore and their Modern Influence

Alyson Krecota
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

Always referred to as a woman, Ireland enjoys a long tradition of feminine agency. In Irish folklore, female characters are portrayed as strong, powerful forces and often in the role of warrior. As Irish children grow up, they are taught about Maeve, the resilient queen of Connacht, St. Brigid, the patron saint of Ireland, and many other influential and powerful female figures. This folklore and these strong figures lead us to wonder how these women continue to be represented in modern Ireland. By examining the traditional literature tradition, artifacts and observation, I investigate how exposure to strong women of the folklore of Ireland influences children's beliefs on the empowerment of Irish women today.

17. Rooted in Myth: Nature's Role in Irish Folklore

Giana Georgiana
Core
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

Drawing on literature, archeology, geography, and environment, this study investigates the role that natural surroundings play in Irish folklore and myth. I explore the ways in which the people of the Republic relied upon their environment to shape their religious and world views, and how it has carried on in the culture through verbal and artistic representations to children. Through the methods of document and artifact analysis, observation, and interviews, evidence demonstrated that the natural environment of Ireland has shaped their culture and beliefs to the core, explaining natural phenomena with myth and utilizing their resources as religious symbols.

18. Hearts, Hands, and a Crown: The History of the Claddagh

Bridgette Gorg
Core
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

A common physical piece of Irish folklore, the Claddagh is a symbol often found in jewelry that is full of representative imagery. The figure is formed by a crowned heart encircled by two hands, and this symbol is most often found in the shape of a ring, but also in earrings, necklaces, or other pieces of jewelry. The heart represents love, the crown represents loyalty, and the hands represent friendship. Originating in the small fishing village of Claddagh in Galway, Ireland, the wearing of the Claddagh emblem is surrounded by a rich cultural heritage. Because of the widespread use and wear of the Claddagh in Ireland, as well as around the world by people of Irish descent, its following only grows. While studying abroad in Ireland, research was conducted through museums tours, document analysis, artifact assessment, and oral folklore collection about the history, heritage, and implications of past and present Claddagh wearing. The legend of the Claddagh was found to be alive and thriving on the island of Ireland.

19. Who killed Bobby Sands: Justice and Jail Conditions

Cera Hissem
Core
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

What is justice? This study explores the concept of justice in Ireland, in an examination of power. The last 66 days of Bobby Sand's life were dedicated to resistance to what he believed were unjust laws and unjust incarceration. His hunger strike started on March 1, 1981. Was he a political prisoner under the conventions of war, or a criminal? Place, titles, and names run deep in Irish Culture. This presentation aims to show the folk examples of place and naming and demonstrate their importance to Irish culture. His impact had spread worldwide, teaching everyone, including children, that the power of language and naming are essential to life. I have collected this information through document analysis, research, and observation while visiting Ireland.

20. Fred Rogers' Noisy and Quiet: The Importance of Reflection in the Silence

Makenzee Knott, Emilee Nedz, Myrissa Donaldson
Fred Rogers Institute
Faculty Advisor(s): Dr. Dana Winters
A Humanities Research for the Public Good sustaining grant from the Council of Independent Colleges

Amidst the digital age, children face an overabundance of noise in their lives. This noise can produce a sense of overwhelmed emotions and unhealthy communication. In his lifetime, Fred Rogers emphasized the importance of balanced noise and quiet in the creation of Mister Rogers' Neighborhood, which presented opportunities for reflection through pauses of silence. This healthy presentation of wait time through silence influences children's own use of quiet in the form of healthy communication with others too. As children listen to others, they will be able to understand the perspective of others. In the form of solitude, the further use of silence permits opportunities for reflection as children may consider their internal selves as well as the world around them. Such reflection leads to an understanding of feelings and the means for communicating these emotions. Through our focused educational, theological, and psychological lenses, we ultimately determine there lies great importance in quiet reflection in the formation of self-identity and thought processes within children. Our findings on noise and quiet are based upon research within the Fred Rogers Archive.

21. Using Fred Rogers' Fundamentals to Thrive

Sanaa Langford, Leslie Soriano
Fred Rogers Leadership
Faculty Advisor(s): Shelly Grooms

Over the course of the Spring semester the Fred Rogers Institute has led an outreach group with campus student leaders to come together and talk about how the 6 fundamentals learned from Fred Rogers apply to us as college students. The students in the group were challenged with thinking about how these ideas could be used to impact the Saint Vincent campus as a whole. My partner and I decided that our project would be outreach groups with students on campus. Through our sessions we learned that many people our age struggle with having making connections and having difficult conversations. These conversations are an important part of the idea of community that is a hallmark of our Benedictine campus. In the outreach groups we would engage in discussion around topics such as racial issues, mental health awareness, and transitioning to campus life. We would invite campus faculty, staff and administration to take part in the conversations, and/or would take the feedback to administration and see how they could implement it on campus. It would also bring students together because they will bond over shared experiences and navigating becoming adults together.

22. The influence of Curcumin and Ginger Extract, Directly, or Infused into Biocellulose, on In Vitro Wound Healing

Jonathan Baum
Biology
Faculty Advisor(s): Dr. Bruce Bethke
A.J. Palumbo Student Research Endowment

Biocellulose, which is a natural polymer produced by bacteria such as Gluconacetobacter hansenii, has properties that allow it to be used as a wound dressing. This polymer also can be loaded with substances to expediate wound closure, making it a better alternative to the classic bandage. In this study, biocellulose loaded with curcumin and ginger extract was used to study migration of mouse C2C12 myoblasts into a wound void in a three-dimensional cell culture model of wound healing. However, difficulties interfacing the infused biocellulose pellicles precluded assessment of the impact of these agents in a three-dimensional model. Consequently, two-dimensional scratch assays were performed to test the influence of a combined curcumin and ginger extract added directly to the medium, on C2C12 proliferation and migration. Surprisingly, the presence of curcumin and ginger in the medium, even at dilute concentrations, failed to promote wound closure, and instead resulted in cytotoxicity leading to a loss, rather than a gain in viable cells. These results strongly suggest that a combination of curcumin and ginger extracts should not be used in wound dressings.

23. The Hypothyroid Medication Synthroid Negatively Influences Visual Acuity in Mice, Implications for Thyroid Eye Disease

Christopher Bush
Biology
Faculty Advisor(s): Dr. Bruce Bethke

A.J. Palumbo Student Research Endowment

Thyroid Eye Disease, a progressive damaging inflammation of the tissues surrounding the eye caused by hyperthyroidism, affects an estimated 16 per 100,000 women and 2.9 per 100,000 men in the general population (Douglas 2020). Synthetic thyroid hormone (brand-named Synthroid), a medication used to treat hypothyroidism, may induce Thyroid Eye Disease in some people. To assess the possible relationship between Synthroid and Thyroid Eye Disease C57BL/6 mice were subjected to a human equivalent dose or an overdose of Synthroid via their drinking water, or left untreated, for a period of 8 weeks. During this period their visual acuity was monitored weekly by recording their optomotor reflexes in an OptoDrum system. Significant differences were noted over time between the in the last 4 ng/mL (standard dose) and 8 ng/ml (overdose) Synthroid treatment groups and the untreated control animals, suggesting that Synthroid negatively affects vision in mice.

24. Naturally Occurring Polyphenols May Reduce Gluten Induced Enteropathy

Matthew Callaghan
Biology
Faculty Advisor(s): Dr. Bruce Bethke
A.J. Palumbo Student Research Endowment; Donation of Cell Line from Penn State University

Celiac Disease is a chronic enteropathy characterized by an immune reaction to the gluten component of wheat, barley, and rye. Peptides released during the breakdown of gluten trigger the immune response and alter the integrity of the intestinal membrane. Recent research suggests that polyphenolic compounds may bind to and sequester these peptides. To test the ability of naturally occurring polyphenols to prevent gluten induced intestinal membrane permeability, human Caco-2 enterocytes were differentiated to form barrier membranes on cell culture inserts and then exposed to proteolytic digests of gluten in the presence or absence of the polyphenols curcumin from turmeric, epigallocatechin gallate (EGCG) from green tea, and mixed polyphenols from apple pomace. At intervals following exposure, the permeability of the enterocyte barrier membranes was tested by monitoring leakage of a fluorescent dye. Preliminary results suggest that these polyphenols show a reduction in gluten-induced membrane compromise and may represent a therapeutic pathway for Celiac Disease patients.

25. Combined Heavy Metal Accumulation from Soil over the Stages of Development in the Life of the Common Sunflower

Jacob Crestani
Biology
Faculty Advisor(s): Dr. Peter Smyntek

Soil contamination with heavy metals is a growing problem as industries like mining and agriculture have exacerbated the transmission of such pollutants. Interaction of these metals with the human body can lead to heavy metal poisoning, with health consequences that can be fatal. One approach to address heavy metal contamination is phytoremediation, which removes heavy metals from soil using hyperaccumulating plants. Despite its environmentally conscious nature and unique remediation abilities, the success of this technology has been slowed by a lack of research, making influences such as heavy metal combination and plant stage of development largely unpredictable. Sunflowers (Helianthus anuus), which are known hyperaccumulators, were grown in soil with either a single treatment of the heavy metal cadmium or lead, or soil with a combined treatment of both metals, and harvested at two-week intervals. Only the two-week harvest of the combined metals treatment showed significantly higher levels of accumulation for these metals in the sunflower tissues. Results suggest the potential effects of sunflower physiology opposing excessive uptake of the cadmium and lead across all other treatments, likely to maintain the health of the plant. Sunflowers performing in-situ soil remediation may not exhibit optimal heavy metal retention when harvested at a later stage of development.

26. Relationship Between Novosphingobium capsulatum Biofilms and Zebrafish injury

Logan Getchey
Biology
Faculty Advisor(s): Br. Albert Gahr O.S.B.
A.J. Palumbo Student Research Endowment

All bacterial species possess the ability to convert from a free-floating, planktonic bacterium into a stationary form called a biofilm. Biofilms strive in aquatic environments, making Danio rerio, the zebrafish a perfect model of study. This experiment studied the effects injuries had on biofilm formation and wound healing. Twenty zebrafish were divided among four different treatment groups varying in the presence of Novosphingobium capsulatum and whether the fish were injured. Samples were collected from each tank and fish. The presence of a biofilm was examined through crystal violet assays, dilution plating, and PCR reactions. Following observation of the injury sites, fish exposed to bacteria were less healed after a week than those not exposed. From these data it can be concluded that zebrafish cannot heal as efficiently when exposed to N. capsulatum. No conclusion about changes in biofilm formation can be made as no significant changes in bacterial growth were observed.

27. Evaluation of Turmeric-Curcumin as a Wound Healing Promoting Agent in a Murine Ear Punch Model

Lindsey Kocjancic, Carrine Soltis
Biology
Faculty Advisor(s): Dr. Bruce Bethke
A.J. Palumbo Student Research Endowment

Wounds are common injuries yet some commonly used wound dressings are detrimental to healing. A need exists for dressings that provide the proper environment for wound closure. The purpose of this study was to evaluate biocellulose infused with turmeric curcumin in complex with black pepper extract (piperine), as a dressing; and determine whether curcumin in complex with piperine would enhance wound healing when administered either topically or orally. Using a murine ear punch model of wounding, infused biocellulose dressings were found to rapidly lose their adherence to the wounds, thus preventing testing of their efficacy. Topical treatment was tested via direct application of a curcumin-piperine solution to the wounds, and oral treatment by administration of curcumin-piperine through drinking water. Photographic monitoring of wound closure rates yielded limited useful data due to the irregularity of the wounds and issues related to the curvature of the ear auricle. Consequently, the hypothesis could not be properly tested.

28. Fecal Parasites in White-tailed Deer

Lauren Makovics
Biology
Faculty Advisor(s): Dr. James Kellam
A.J. Palumbo Student Research Endowment

Parasites are known to infect mammalian species. Knowledge of exactly what parasites infect local animals is a public health concern, as deer fecal parasites can then be transmitted to domestic animals. If white-tailed deer are overpopulated, then the likelihood of the presence of parasites and their subsequent transmission is high. Deer activity was monitored at six local areas via trail cameras over a three-month period, and twenty fecal samples were collected from each location to examine via microscope for parasites. The percentage of samples positive for lungworm larvae was directly correlated with the deer activity in the area, which was measured in the number of deer pictures taken via trail camera per day. Lungworm larvae were found in 21.67% of all 120 samples. The prevalence of parasites in white-tailed deer is related to overpopulation and a population exceeding carrying capacity has numerous negative implications, including increased likelihood of parasitic transmission as well as increased transmission of disease, including chronic wasting disease (CWD).

29. The Genetic Story Inside Mosquitos

Ryan Patricio
Biology
Faculty Advisor(s): Dr. Michelle Duennes
A.J. Palumbo Student Research Endowment

Mosquitoes are the deadliest animal on the planet, being responsible for over 400,000 deaths in 2019 alone. The lethality of this insect is the direct result of their reliance on mammalian blood as a nutrient resource in the female's production of eggs. As an extension of prior research on prey choice and selective behaviors, this experiment used genetics to identify and infer the behavior of these parasitic creatures. The first phase of experimentation was field collection: over a month-long period beginning in October 2022. At several on/off campus locations, mosquitoes were collected by hand, CDC light trap, and gravid trap. The second phase of experimentation was done in the laboratory. Mosquito samples were sent to Jonah Ventures to analyze their bacterial symbionts. An unexpected outcome of this project was the high number of non-mosquito flies that were attracted to mosquito traps designed by the CDC. For these flies, I used DNA methods to identify them to species. I will present the diversity of bacterial symbiont species identified from the mosquito samples as well as the diversity of flies accidentally trapped. My findings will provide insights into the ecology and behavior of disease-carrying mosquitoes as well as the implications of the fly species that are by-catch in mosquito traps. My results have the potential to improve future mosquito control methods.

30. How Sweet Can a Zebrafish Get?

Estefany Sierra-Cisneros
Biology
Faculty Advisor(s): Br. Albert Gahr O.S.B.
A.J. Palumbo Student Research Endowment

Artificial sweeteners have been used in place of natural sweeteners. The argument that supports the increased usage of artificial sweeteners is that it helps decrease caloric intake. However, despite this health benefit, other research has correlated negative health outcomes such as obesity, type-2 diabetes, and metabolic syndromes with the mass consumption of artificial sweeteners. For this research, the long-term effects that artificial sweeteners such as sucralose and aspartame can have on zebrafish development were studied. The morphological and behavioral differences were analyzed using Novel Tank Test, ImageJ Software, and gene expression. This research concluded that aspartame fish were much larger and more active than the control and sucrose groups. Additionally, sucralose caused a substantial decrease in Tnnt3A expression compared to both the control and sucrose. To further improve statistical relevance and better characterize the morphological and behavioral adaptation of the fish, it may be proposed to repeat this experiment with a larger sample size.

31. The Effects of Probiotics on Zebrafish Wound Healing

Haley Smolleck
Biology
Faculty Advisor(s): Br. Albert Gahr O.S.B.
A.J. Palumbo Student Research Endowment

Probiotics are microorganisms that show various health benefits for the host in which it lives. Three major benefits are that they promote wound healing, decrease inflammation and the number of bacteria present. Zebrafish (Danio rerio) served as a model organism for muscle regeneration with the addition of the probiotic, Lactobacillus rhamnosus. In this study, injured zebrafish muscle was treated with the probiotic or saline to aid in muscle regeneration. The probiotic L. rhamnosus treatment should aid in muscle regeneration for wound healing. To determine the effects of the probiotic, three muscle regulatory genes were analyzed through Real Time PCR, the muscle injury sites were observed under a microscope, and behavioral responses were recorded using a Novel Tank Test. Although no difference in wound healing was observed, a calming effect was noted through the novel tank test. Further studies should be completed to investigate the effects of probiotics on muscle regeneration.

32. Effects of Invasive Japanese Knotweed on Stream Bank Erosion in Pennsylvania Watersheds

Mason Brunson
Environmental Science
Faculty Advisor(s): Dr. Peter Smyntek

The rapid spread of Japanese knotweed across the state of Pennsylvania has become increasingly destructive. More specifically, knotweed spread has been destructive to Pennsylvania's stream banks and watersheds. The biological and physical properties of knotweed allow the plant to spread rapidly on land saturated with or near water. Its shallow root system decreases the stability of the soil, making the land or banks more susceptible to erosion. To test Japanese knotweed's effect on stream banks in the local area, this study evaluated stream bank erosion in knotweed infested areas and areas without knotweed at Monastery Run, Fourmile Run, and Crabtree Creek in Westmoreland County, PA. Erosion pins were used to quantify erosion over the span of three months at these three waterways. Results from this study revealed a high variance among the knotweed and non-knotweed groups of the three streams. Therefore, according to the data we cannot infer that knotweed induced or increased erosion. To expand upon this research, further studies should collect data more frequently over a longer period of time at a larger number of sites. Researching the magnitude of impacts that Japanese knotweed has on Pennsylvania waterways is extremely important in understanding present day and future watershed ecology.

33. The Effects of Varying Angles of Solar Photovoltaics on Soil Water Content

Zach Houston
Environmental Science
Faculty Advisor(s): Dr. Peter Smyntek

In a world with a rapidly growing population, it is important to focus on how we may provide for those people. Agrivoltaics aims to combine energy and food production while reducing land usage. Currently droughts are on the rise and will only get worse as climate change becomes more prevalent. Further, multiple studies showed that crop production of wheat, maize and soybean decreased by 10% to 50% in North and South America due to climate change and other factors. In this study, three rows of beans were planted under solar panels at 20-degrees, 40-degrees, and 60-degrees; one row of beans was in front of panel, one directly below the front lip, and one underneath the panel. Soil moisture was found to be affected at a greater rate under the lip of the 60-degree angle panel than any of the other test panels. The 20-degree panel had significantly lower soil moisture underneath the panel while the 40-degree panel had consistently higher soil moisture levels than any other panels during dry periods while the 60-degree panel had the lowest soil moisture. With these findings, we can help determine what panels may work better with different crops that may require different soil moisture levels. These findings can help prioritize what angle of solar panel is ideal to use in the construction of agrivoltaics in farms.

34. The Effects of Climate Change on Shoreline Erosion of Lake Erie

G. Joseph Jafarace
Environmental Science
Faculty Advisor(s): Dr. Peter Smyntek

The reason that this project is important is because approximately 21% of the world's available surface freshwater resides within the Great Lakes, which are a major source of drinking agricultural and recreational water for their surrounding areas. I have done for this project is investigate the coloration of the Climate change is affecting the Great Lakes, and changes in the lake water levels are contributing to greater shoreline erosion. Temperature and precipitation records from Ashtabula County, Ohio were compared to average water levels of Lake Erie over a 105-year time period. Strong correlations between water level and average temperature and precipitation were observed, with the lowest water levels in the 1930s and the highest water levels in 2019-2020. This increase in the water level relates to the increased erosion rate of the bluffs on Lake Erie. This poses a problem to major infrastructure, which has led to major construction projects in the affected areas. These climate changes impacts on the water level and shoreline erosion rates of Lake Erie are affecting how local governments are planning their future building projects. that is affecting the local infrastructure and how local governments are planning their future building projects.

35. Pollination Networks from Santa Cruz Island Versus Mainland California

Sarah O'Toole
Environmental Science
Faculty Advisor(s): Dr. Michelle Duennes
A.J. Palumbo Student Research Endowment

Pollinator networks allow researchers to depict the relationships between plants and pollinators within a particular community and to compare those relationships to that of other communities. The Channel Islands are a group of islands located off the coast of California, and they are home to numerous endemic species that are distinct from those on the mainland. I hypothesized that many more plant species and pollinators would be involved in the network on the mainland compared to the smaller island. The goal was to create a record of the host plants present and to compare the relationships between specific plant and pollinator species on the island versus the mainland. In this study, I recorded plant-pollinator interactions on Santa Cruz Island and on the mainland in Ventura, California, and I collected pollinator visitation rate data for specific plants. As predicted, many more pollinator and plant species were involved in the mainland network. Honey bees, which are not native to the United States, played a large role in the mainland network, but were absent from the Santa Cruz Island network, which included many species known only to occur on the Channel Islands. These data provide important information on the pollinators of rare island endemic plants and some insight into the role non-native species play in pollinator networks and species interactions broadly.

36. ENGR 328 - Design and Fabrication with Modern Materials

Joseph Bujdos, Matthew Byrne, Michael Fekete, Noah Miller, Noah Schollaert, Joseph Sarriano, Mitchell Tryon, Anthony Vanderelli, Charlie Wolenter
Engineering
Faculty Advisor(s): Dr. Adam Wood

In ENGR 328, students use a range of fabrication techniques to build creative products over a few short weeks. These products will be on display and a faculty member or student will be present to talk about the fabrication methods used in this class.

37. Parahydrogen quantification for signal-amplification by reversible exchange nuclear magnetic resonance

Seth White
Physics
Faculty Advisor(s): Fr. Michael Antonacci, O.S.B.

Parahydrogen hyperpolarization is a growing field of study in NMR spectroscopy for its ability to increase signal by several orders of magnitude. Here we measure the fraction of parahydrogen produced by a home-built generator at different flow rates for future study in signal-amplification by reversible exchange. The fraction of parahydrogen was measured withing 3% of the theoretical maximum at 77K for all flow rates.

38. Deadtime Correction for calibration of Cosmic Watch Muon detectors

Matthew Vanden Berk, Coty Walters
Physics
Faculty Advisor(s): Fr. Michael Antonacci, O.S.B.

Cosmic Watch Muon detectors provide a cheap, accurate method for detecting radiation and cosmic rays. To achieve our long term goal of detecting cosmic ray showers, multiple detectors need to be calibrated relative to a particular reference detector. We are making corrections for deadtime, which is vital to the overall calibration, through systematic code changes and correcting for deadtime by the use of the unbiased maximum likelihood estimator.

39. Plant Chip Development for Root Decision Making

Christian Ciecierski
Engineering
Faculty Advisor(s): Dr. Adam Wood

Plants are complex living organisms that respond to various stimuli daily. One way in which plants can interact with their surroundings is through their root systems. Root systems are integral to plants because they allow the plant to absorb the necessary nutrients for growth. Therefore, plant roots have been shown to grow in, around, and through various obstacles in order for the plant to survive. One question, however, is how do plant roots know where to grow. Plant roots are difficult to study due to their presence in the ground and complexity of the environment in which they live. As a result, there are hundreds of factors that influence how they may grow. This research aims to develop a systematic system in which plant root decision making can be studied when roots are exposed to physical barriers and different amounts of light stimuli.

40. Exploration and Comparison of Nitrogen Doped Carbon Quantum Dots as Antibacterial Properties are extended to Fungi

CJ Ciecierski
Biochemistry
Faculty Advisor(s): Dr. Steven Gravelle

An emerging new field of study in the world of science is the connection between nanotechnology and its applications in biological systems7. Quantum dots have been gaining attention due to their abilities to aid in the treatment of cancers and bacterial infections14,25. One such area that is not as heavily explored is the effects quantum dots can have on fungal cells. This research aims to expand upon this area by evaluating the effects of Nitrogen Doped Carbon Quantum Dots (NDCQDs) as an antifungal agent against yeast cells. NDCQDs have been selected due to their strong ability to produce reactive oxygen species (ROS) to inhibit cell growth and have a high biocompatibility. Through this research the synthesis of both NDCQDs and Carbon Quantum Dots (CQDs) was preformed and analyzed through spectroscopic data collected from Absorbance, Fluorescence, and IR spectroscopy. The ability to produce ROS was tested using the fluorescence probe dichlorofluorescein diacetate which becomes fluorescent upon oxidation26. Lastly, the Quantum dots were tested against bacterial and yeast cells through a disk diffusion assay to determine their general effectiveness. Overall, this experiment demonstrates the successful synthesis of both NDCQDs and CQDs, the increased generated of the ROS species by NDQCDs, and the inhibition of bacterial growth caused by the QDs.

41. Ireland Herself: How the Nation of Ireland Embodies the Woman Figure

Katarina McCaffrey
Core
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

The historical depiction of Ireland as a woman transcends time to manifest in modern Irish culture and folklore. Throughout the history of mankind, the role of women has been minimized and disregarded as importance. Globally, women have been viewed as less than their male counterparts through the historical stains of prejudice laws and regulations against women. The nation of Ireland has protected and honored the woman figure through portrayment of feministic features in Irish history, literature, and culture. As I traveled throughout various parts of Ireland, I discovered and documented how women continue to hold a significance in Irish living. The various artifacts that I came into contact with while in Ireland, whisper the Irish tradition of how women remain powerful forces to be reckoned with.

42. From Fila to famine to Fenians: Ireland in Transformation

Abigail Wilson
Core
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

The presentation traces the origins of Irish folklore and its significance in contemporary Irish culture through the collection of images—sculptures, murals, and Celtic Petroglyph. These images are found in authenticated and unofficial sites throughout Ireland. This presentation demonstrates that folklore was and remains a strong influence in contemporary Irish society through artistic expression of transformation.

43. Cleaning a Pathway to Success One Table at a Time

Azalynn Coblentz, Emma Palombia
Education
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

One student in the Bearcat BEST transition program at Saint Vincent College has made it an interest to make a cleaner eating environment for those at Saint Vincent College. To be the most successful, the student worked at the Saint Vincent College Cafeteria under the instruction of job coaches. Our goal was for the student to become more self-sufficient and utilize the skills she learned in the cafeteria to future cleanliness employment opportunities.

44. Cleaning Up Carey; Vocational Training in Custodial Arts

Elizabeth Del Signore
Education
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

A student in the Bearcat B.E.S.T transition program at Saint Vincent College had the desire to work in a custodial setting. In order to gain the necessary skills and experience, the student worked in the Saint Vincent College Carey Center under the guidance of a job coach. This project used instructional methods and data collection to track his progress. My goal for the student was to gain independence and generalize the skill he learned in future custodial employment he might have in the future.

45. Island of Knowledge Research

Samantha Lantz
Education
Faculty Advisor(s): Mr. Greggory Brandt

In this project, I investigated three different questions. I researched answers for these questions over the course of the semester. Why do we contain knowledge? How do we contain knowledge? How do we know that what we know is real? Those are the three questions I thought of when I read one of the readings for my learning seminar. I investigated how knowledge is formatted with us in those three ways.

1. The association of stress, athletics, and academics

Nicholas Carter, J'Shawn Taylor
Psychological Science
Faculty Advisor(s): Dr. Mark Rivardo

Previous research has shown that higher achieving students who are athletes are more stressed than other individuals but did not address how an athlete's role on the team affected this. The association of stress, athletics, and academics was evaluated in a sample of 176 Saint Vincent College undergraduates. Participants completed 14 items addressing general stress as well as questions regarding their athletic status (athlete, non-athlete) and their role on the team (starter, non-starter, bench/does not play). We conducted a 2 x 3 ANOVA with a dependent variable of stress and independent variables of athletic status (athlete, non-athlete) and student success (high, moderately high, very high). The results were not theory consistent, as there was no main effect of athletic status and student success on stress as well as finding no interaction of the two. We also conducted a 2 x 3 ANOVA with athletic status and athletic role (starter, non-starter, bench/does not play) Likewise, we found no interaction of student success and athletic role on stress as well as no main effect for either of the variables. Our findings should not be the end of the discussion, however, because our sample was small, and mean GPA was abnormally high and thus it is not representative of the population.

2. Gender Differences in Physical Self-Esteem

Vincent Lombardi, Brianna Kraus, Joy Pontzer, Mila Kalcevic
Psychological Science
Faculty Advisor(s): Dr. Mark Rivardo

In this study we explored whether physical self-esteem varies by gender and self-awareness. Existing literature indicates that men have higher physical self-esteem than do women and that people are more critical of themselves when before a mirror. The Physical Self-Description Questionnaire assessed total physical self-esteem, comprised of several subscales: physical appearance, body fat, sport, and strength self-esteems. Participants were placed in front of a set of mirrors (aware condition) or had to periodically lap a stopwatch (unaware condition) while filling out the questionnaire. Fifteen male and 38 female undergraduate students participated in the study. An interaction of gender by awareness for physical appearance self-esteem was found where men reported higher physical appearance self-esteem in the unaware condition than aware and women reported lower physical appearance self-esteem in the unaware than aware. All other differences were nonsignificant. The implications of this could be that men and women think about their appearances in different proportions on a daily basis.

3. It's About Drive: A Study of the Dunning-Kruger Effect in Driving Ability

Owen Shotts, Michael Malone, Rebekah Kohser, Jacob Rzempoluch
Psychological Science
Faculty Advisor(s): Dr. Mark Rivardo

This research studied how the Dunning-Kruger effect relates to driving performance and gender. Participants (N = 45) completed a simulated driving course and were asked to give an assessment of their performance based on their adherence to traffic laws, following of directions and general driving performance. The research team gave a score to each participant based on the types of driving mistakes made. These scores were divided into three driving performance groups: low, moderate, and high. The Dunning-Kruger effect was observed in our results. The low performing participants in our study significantly overestimated their actual driving performance, whereas our moderate and high performing participants accurately estimated or underestimated their actual driving performance. However, there were no significant results pertaining to gender. This study successfully replicated previous research on the Dunning-Kruger effect, and this study gives support to Dunning and Kruger's theory that the unskilled are unaware of how unskilled they are (Dunning & Kruger, 1999).

4. Gender-based Stereotype Threat for Visuospatial Ability

Helen Kish, Garrett Miller, Mary-Margaret Perkins
Psychological Science
Faculty Advisor(s): Dr. Mark Rivardo

In this study, we investigated visuospatial ability, which is the mental ability to rotate shapes. Usually, men perform better at visuospatial tasks than women, but research suggests that encouraging women by reversing this implicit stereotype can cause their performance to match or even exceed that of men. This study's design incorporated three stereotype conditions. Participants were 176 undergraduate students consisting of 70 men and 106women. These participants were randomly assigned to one group of the stereotype threat conditions (stereotype threat, nullified, reversed). Participants then completed two measures in person, on Qualtrics: the Vandenburg Mental Rotation Test (VBMRT) and Bem Sex Role Inventory (BSRI-12). The VBMRT measures visuospatial ability and the BSRI-12 measures how strongly participants identify with masculine and feminine words. There were also a handful of confidence checks throughout the study as well as a demographic section at the end. We predicted that in the stereotype threat condition men would outperform women in the VBMRT, in the nullified condition men would slightly outperform women in the VBMRT, and in the reversed condition women would slightly outperform men in the VBMRT.

5. Comparing Psychosocial Interventions for Malnourished Low-Income Children

Francesca Florie
Integrated Science
Faculty Advisor(s): Dr. Caryl Fish

Malnutrition is perhaps one of the most debilitating ailments that can affect young children. This is especially true within those aged 5 and under, with cases being abundant within low-income areas. The illness originates from inadequate absorption of nutrients early in life, with symptom severity and state of each case varying from individual to individual. Any variety of the ailment has detrimental impacts on one's physical state in terms of adequate muscle mass and appearance for their age. It also mentally degrades the patients and impacts their cognitive development. The purpose of this paper is to assess psychosocial stimulation and cognitive behavioral therapy in ongoing nutritional interventions attempting to boost both muscle growth and developmental potential. Both were also compared to determine if one was superior in boosting the aforementioned areas of growth than the other. Results from the discussed articles show that combinations of interventions did promote simultaneous improvements in a child's BMI and scores in developmental domains, such as language communication and mental state. However, psychosocial stimulation does come out on top due to its incorporation of exercises that directly target both boosting of muscle regrowth and mental behavior.

6. Comparison of Treatment Options for Torn Labrum in Shoulder

Monica Gourley
Integrated Science
Faculty Advisor(s): Dr. Caryl Fish

The labrum is a thick tissue or cartilage that attaches to the rim of the socket part of a ball-and-socket joint such as the hip or the shoulder, and it helps to keep the ball in place. Synovial fluid and the labrum help with the joint's natural movement by providing lubrication and a smooth surface. Surgery and physical therapy are the two main approaches to patients that have a torn labrum. The labrum is a piece of tissue or cartilage and when it is torn, it can cause instability within the shoulder and depending what type of tear it is can cause shoulder dislocation. The purpose of this comprehensive paper is to determine which treatment option is more beneficial to patients. The findings show that surgery is the better treatment option. It will help the patients regain strength and mobility as well as helping with pain relief. After the patient receives the surgery and the proper post-surgical rehabilitation, daily life for the patient will be improved. Overall, the information gathered in this comprehensive paper is important for practicing doctors and physical therapist so that they can treat torn labrums most efficiently.

7. Las Universidades de Salamanca y Alcalá: ¿En qué se parecen y se diferencian?: The Universities of Salamanca and Alcalá: How are they similar and different?

Sanaa Langford
Modern & Classical Languages
Faculty Advisor(s): Dr. Juan-Carlos Rivas

Spain has a rich history and culture, especially regarding institutions of higher education. Two of its most important educational and cultural advances are the Universities of Salamanca and Alcalá. These two are some of the oldest universities in the world and in Spain. They were created in two different time periods and were created for the advancement of the education of Spain. They were created by Spanish leaders to give Spain what they needed at that time. The University of Salamanca was very conservative and tried to bring Spain back to its old historic ways. The University of Alcalá was more liberal and wanted to incorporate the new Spain and the old. The histories of these two universities are very interesting and important not only to Spain but the rest of the world.

8. El toreo/Bullfighting

Lauren Makovics
Modern & Classical Languages
Faculty Advisor(s): Dr. Juan-Carlos Rivas

It is important to understand the history of Spanish traditions, and some of these traditional events involve bulls: the running of the bulls and bullfighting. While the events sound quite similar, they are actually a bit different. When most people think of bullfighting, the image of a matador waving a red cloth at an angry bull comes to mind. Spanish fighting bulls, also known as toros bravos, are most often used in these events. Bullfighting has been a part of Spanish culture for hundreds of years. There are different opinions about bullfighting, specifically if it is ethical or unethical. Because the bull is typically stabbed in the neck and killed by the matador, most people consider it to be animal cruelty. The animal cruelty debate not only involves the bulls but also the horses that are often involved in the traditional event. Despite ethical concerns, bullfighting is an integral part of Spanish history and culture.

9. The Spanish-American War: The Perspectives and Effects of the War

Devin Barrett
Spanish
Faculty Advisor(s): Dr. Juan-Carlos Rivas

The Spanish-American War of 1898 was a conflict between the two nations of Spain and the United States. While many suggest that the conflict was due to tensions surrounding Cuban revolutionaries fighting for their independence, the war can also be attributed to the destruction of the USS Maine battleship, as well as the imperial desires of the United States to control some of Spain's colonies. The two most important battles of the Spanish-American War were the Battle of Manila Bay and the Battle of Santiago. As a result of this conflict, both countries signed a peace treaty, in which the United States obtained Guam, Puerto Rico, and the Philippines from Spain. While the conflict was largely positive for the United States, it also led to a series of reformative movements within Spain, such as the generation of 98.

10. Changes in the Gut Microbiome as a Result of Buprenorphine Addiction in Rats

Hanna Pavsek
Biochemistry
Faculty Advisor(s): Dr. Matthew Fisher

Opioid use disorder is a national health crisis. One aspect of opioid addiction that has yet to be fully examined is the effects of alterations in the microbiome and gut-brain axis signaling. These could affect central nervous system activity during opioid intoxication and withdrawal. In this research project, buprenorphine (a synthetic opioid) was injected into rats in order to analyze the alterations in the gut microbiome as a result of opioid addiction. Over the drug addiction time period, fecal samples were collected and analyzed to look for alterations in the relative abundance of bacteria genera most populated in the gut microbiome. The four genera most common to the rat gut microbiome - Prevotella, Lactobacillus, Ruminicoccus, and Bacteriodes were analyzed by PCR and agarose gel electrophoresis to determine the effect of buprenorphine addiction on their relative abundance in the rat gut microbiome. As a result of buprenorphine injection, the relative abundance of Bacteriodes increases following injection, but dramatically increases following a longer period after injection. Prevotella and Lactobacillus demonstrate relative abundance variation early on after injection. Ruminicoccus demonstrates no variation in relative abundance. It is evident that different bacterial stains in the gut microbiome can respond differently to buprenorphine injection.

11. The Relation of Resting Brain Dopamine Levels with Various Conductive Polymers

Amanda Serapiglia
Biochemistry
Faculty Advisor(s): Dr. I. Mitch Taylor

Dopamine (DA) is a key monoamine neurotransmitter made in the brain that is involved in vital functions of the body. DA is an electroactive compound that is capable of reversible oxidation to dopamine-o-quinone upon application of a sufficient potential. Thus, electrochemical techniques have been successful in detecting DA levels within the brain in the past. The electrodeposition of a conductive polymer such as Poly(3,4-ethylene dioxythiophene) (PEDOT)/ graphene oxide (GO) and PEDOT/functionalized carbon nanotubes (CNT) have been shown to increase the sensitivity and lower the limit of detection for DA as compared to bare carbon fiber electrodes (CFE)s. Chronocoulometry and chronopotentiometry are two different polymerization methods that are capable of depositing a conductive polymer onto the surface of a CFE. Chronopotentiometry involves the application of a set current where the change of the potential with time is detected. On the other hand, chronocoulometry has the charge measured as a function of time after the application of a potential. This research project proposes to compare the electrochemically polymerized PEDOT/CNT CFE to the PEDOT/GO CFE sensitivity of the resting levels of DA by SWV while utilizing two different polymerization methods- chronocoulometry and chronopotentiometry to determine what electrode surface structure will be most suitable for the brain.

12. Stream Bank Erosion Quantification

Mason Brunson
Environmental Science
Faculty Advisor(s): Dr. Peter Smyntek

Studying and measuring stream bank erosion is important in understanding stream ecology and predicting structural and biological changes in streams and rivers. Stream bank erosion can affect streams physically in terms of turbidity, flow, and stream shape. It also affects stream biologically in terms of vegetation growth along the banks as well as the abundance and diversity of aquatic life within the stream. To find the most effective form of stream bank erosion quantification, two studies were compared. Three main ways of erosion quantification were examined: erosion pins, laser scanner, and total station. Results determined that no detectable differences were discovered between the three techniques. Correlation tests between total station measurements and laser scanner measurements implied that the data was similar, but this doesn't imply that one is better than the other. These findings can be important because they may encourage others to perform similar studies on other streams. Although a specific technique was not determined most accurate in this study, it is noteworthy that all three measurements can be useful in measuring and quantifying stream bank erosion.

13. Watershed Impact Model for the East Palestine Train Derailment Chemical Spill

Jacob Crestani
Environmental Science
Faculty Advisor(s): Dr. Peter Smyntek

The recent train derailment and resulting chemical spill in East Palestine, Ohio, have raised concerns about the safety and quality of the local water. Both human and environmental health are now at risk. Although events like these happen from time to time, it not always easy to quantify the total extent of effects. The goal of this project was to model the route that the chemicals spilled into the water would take starting in East Palestine, and attempt to assess the speed at which they would move from one river into the next. This information was likely to give insight as to how long the chemical are expected to remain in the water as well. Past research has been conducted with similar goals and was used as the foundation for the modeling of this event. Five chemicals were spilled in this event: vinyl chloride, butyl acrylate, isobutylene, ethyhexyl acrylate, and ethylene glycol monobutyl ether. According to the model used, they are expected to flow through the Mississippi Watershed into the Gulf of Mexico, moving along the rivers at a moderate rate. This suggests that clean-up efforts should be focused along the Ohio and Mississippi rivers over the course of the next several months. Models like those used in this study provide direct estimates on movements of pollutants in waterways and should therefore be central in organizing responses to spill events.

14. How Do Different Soil Types Affect Streambank Erosion?

Zach Houston
Environmental Science
Faculty Advisor(s): Dr. Peter Smyntek

Rivers and streams are constantly changing shape and direction because of the erosion of their banks. Severe erosion could cause infrastructure risks, lead to flooding, and alter the rates of river migration. These issues can be prepared for by looking at soil types and their effects on stream bank erosion. The study compared the Landsat data on the Ohio River to determine erosion rates and used the Web Soil Survey from the United States Department of Agriculture (USDA) to determine soil type. These impacts were found on straightaways to minimize other factors of erosion. It was found that sandy types of soil negatively impacted erosion rates of stream banks compared to silt and loam soil types. We can use these findings to help slow stream bank erosion by reinforcing the banks of streams where erosion is more likely to occur. This intervention will help reduce the risks of flooding as well as the impacts on infrastructure located near the streams.

15. Glacier Melting Resulting in the Release of Potentially Dangerous Microbes

Isabella Ladisic
Environmental Science
Faculty Advisor(s): Dr. Peter Smyntek

Climate change is affecting the Earth in ways that no one could predict to be possible. Melting glaciers could lead to underappreciated than rising sea levels, they can lead to the emergence of disease. After intense research, there have been many findings of microorganisms being able to survive in unsuitable environments like volcanoes and deep underwater vents. New research has led us to discover microorganisms that have been living in solid blocks of ice and permafrost for over 15,000 years. In a study done by Kimberly et al, 200 ice samples were taken from a permafrost in Sweden. Thousands of microorganisms were found in the ice and 58% of them were still alive and active. But what is the most interesting was the fact that of the active ones, 25% were unclassified. This could be a danger to populations living in polar regions as when the ice melts, they will be exposed to thousand-year-old viruses that no one knows anything about. With modern transportation, these unclassified, ancient organisms can potentially infect people and spread globally. Further research is necessary and mandatory to determine the full extent of damage that could occur with the increase in temperatures.

16. Harmful Algal Blooms on the Coast of Ohio

Dominic Lessard
Environmental Science
Faculty Advisor(s): Dr. Peter Smyntek

Lake Erie is the most productive of the Great Lakes, this makes Lake Erie a home for harmful algal blooms. Harmful algal blooms in Lake Erie are dangerous to people who draw water from Lake Erie and also harm the aquatic wildlife in the lake. To find harmful algal blooms concentrations the Ohio EPA harmful algal bloom surface monitoring was used. This site shows the concentration of algal blooms for certain areas in ug/L. Urban areas along the coast in Ohio mostly Toledo had the highest concentration of harmful algal blooms as a result of this in 2014 Toledo had to restrict the amount of water people pulled from Lake Erie as it would be detrimental to their health. Yet in Cleveland the concentration of algal blooms in the water is undetectable. This difference in the concentration of algal blooms can be attributed to the amount of input each city has. Cleveland has a small river that flows into Lake Erie however Toledo has multiple larger rivers that are affected by algal blooms.

17. Anthropogenic Nutrient Inputs in Pennsylvanian Lakes

Ryan Patricio
Environmental Science
Faculty Advisor(s): Dr. Peter Smyntek

Prior hydrological research has developed the concept of how lake productivity is directly attributed to their types and amount of nutrients. This research is designed to compare the dissolved nutrient concentrations of different lakes depending on their surrounding environment. The productivity of lakes, or ability to sustain living matter, is known to be intwined with the levels of inorganic nutrients (oxygen, carbon dioxide, nitrate) present in the water. Knowing that humans are anthropogenic sources of such minerals involved in productivity, this warrants the following investigation into how much human agriculture is altering levels of phosphorus and nitrogen. Using USGS survey data and modelling via the Model My Watershed program, this study has compiled evidence that gives us an idea of how much human agriculture [I.e., fertilizers and pesticides] impacts lakes in our lakes fed by the Conemaugh River and Loyalhanna Creek. In general, it is evident anthropogenic nutrient input increases their appearance in our waterways.

18. Correlation Between Aluminum Uptake and Behavior of Crayfish in Simulated Acid Rain Events

Shane Piper
Environmental Science
Faculty Advisor(s): Dr. Peter Smyntek

Aluminum is present in water as a result from precipitation of acid rain. When the pH of the water becomes acidic, the minerals in rocks start to erode, and the dissolved aluminum is toxic to crayfish. This study examined the effects of changing pH levels and concentrations of aluminum inside of a tank. Results show that there is a correlation between the pH of the water and the aggression between two or more crayfish in a tank. As pH decreases or becomes more acidic, the aggression between crayfish increases. When pH becomes less acidic and increases, the crayfish interactions with each other decreases. There is no correlation between the concentration of aluminum experienced and the crayfish uptake of dissolved aluminum. Although there are no observed short-term effects of aluminum uptake by crayfish, the study shows how acid rain is a

problem because it affects the behavior of crayfish. Long-term exposure to acid rain may be detrimental to the health and behavior of crayfish.

19. How the Population of Oysters Affects the Health of the Chesapeake Bay

Abigail Stewart
Environmental Science
Faculty Advisor(s): Dr. Peter Smyntek

Oysters have a large role in the health of the Chesapeake Bay. They are known as a keystone species and their job is to filter and remove excess nutrients from the water which helps keep the water clean and clear. This is important to allow grass beds and any submerged aquatic vegetation to grow which will lead to increased fish and crab populations as well as a more aesthetic bay. My project is titled “How the Population of Oysters Affects the Health of the Chesapeake Bay.”

My research focused on the shift in population of oysters over time and the health and water quality of the bay. As I expected, from 1800 the population decreased extremely rapidly to a very dangerously low number in 2000. Concurrently, the water quality seemed to follow the same trend, rapidly decreasing. However, recent numbers seem to be on the rise. Our efforts to regain a healthy bay have been slowly working; population increases have been seen in oysters due to new regulations and oyster farms in action. Reversing our human impacts of over oystering for generations is the first step to attaining the same healthy bay that was here long before we were.

20. Survey of VM Allocation Algorithms in Cloud Computing

Jacob Losco
Computer Science
Faculty Advisor(s): Dr. William Birmingham

Cloud computing is the concept of providing computing services and resources to others through managing a series of relatively homogenous machines that can be very quickly allocated and released in order to process a number of requests very quickly. Virtualization is a critical component of this, allowing multiple jobs and services to run on a single machine. The concept of a company basing its business model off of providing cloud services to clients has become commonplace, but there are many issues still prevalent in the setup and management of these environments, such as data privacy, performance, and resource utilization. This survey defines the problem of vm load balancing in a cloud computing environment, and discusses existing proposed solutions to said problem. Cloudsim, a common method of experimenting with cloud computing environments, is explained, and several vm allocation policies included with it are tested against common metrics. Lastly, results from data collection are displayed and opportunities for additional research are discussed.

21. Scan-A-Lot (A Parking Lot Management System)

Curtis Schrack, Nickolas Downey, Andrew Hoffer, Jermey Capella, Henry Beattie
Computer Science
Faculty Advisor(s): Dr. William Birmingham
A.J. Palumbo Student Research Endowment

Scan-A-Lot is a senior project developed by five Saint Vincent CIS department members. The project uses a combination of a website and an app to manage parking lots. The group aimed to develop an easy-to-use parking lot management tool incorporating new technology features like scanning text recognition. The app development was done on Android devices. By scanning plates, the app identifies when a vehicle is illegally parked and alerts the user. The app also allows users to write/print tickets and make minor ticket edits. The website provides a more in-depth view of the parking lot features. Providing necessary tools such as adding new parking lots, authorized vehicles, type of offenses, and new users permitted to access the app and website.

22. Buckling Pneumatic Cylindrical Actuator to Generate Torsional Motion

Sasha Cindric, Cara Luallen
Engineering
Faculty Advisor(s): Dr. Derek Breid
3 Minute Pitch Finalist 2022

Soft robotic devices use the properties of compliant materials to simplify the design and control of robotic devices while making them safer for human interaction. Many applications for soft robotics exist in the medical and manufacturing industries such as transporting delicate food items. In order for soft robots to move, soft actuators must also be developed. One type of actuator is known as a vacuum actuated muscle-inspired pneumatic device (VAMP), which uses negative air pressure in conjunction with the controlled collapse of a network of flexible supports to generate motion. Past research has produced linear actuation using this strategy; however, advanced applications require more complex forms of motion than simple contraction. This study found that by adjusting the shape of the chamber and the pattern within it, torsion can be generated with a VAMP. Using angled vertical beams to create a parallelogram pattern within the actuator allows for shear deformation when negative air pressure is applied. When the parallelograms are arranged in a cylindrical pattern, the shear forces in each shape generate torsion. The new cylindrical actuator was fabricated using a three-part mold 3-D printed via stereolithography and cast in a two-part silicone material (Ecoflex).

23. Research Experience for Undergraduates: PolyHIPE Foams for Water Filtration

Cara Luallen
Engineering

The University of Alabama's Interdisciplinary Applications of Advanced Polymer Materials Research Experience for Undergraduates (REU) program provided the opportunity to study high internal phase emulsion polymer foams (polyHIPE) for water filtration. During the 8 week program, students worked with a faculty advisor to conduct research and present progress to other students and professors during the program and at the AIChE Annual Student Conference. This study aims to identify an ionic liquid solvent to create a self-emulsifying polyHIPE foam with imidazolium styrene [TF2N] for water filtration. When added to a solvent, imidazolium styrene causes a decrease in the interfacial tension between the monomer and IL solution and an immiscible internal phase such as water. Three ionic liquids were used as solvents; the interfacial tension of each IL was measured with increasing concentrations of imidazolium styrene. Although the solutions containing some ILs caused a decrease in interfacial tension with increasing concentrations of monomer, the interfacial tensions were still too high for the solution to be self-emulsifying. The resulting interfacial data on imidazolium styrene may prove useful to future projects. Imidazolium styrene with longer hydrophobic chains that more closely resemble the structures of surfactants should be investigated for self-emulsifying solvents.

24. Development of a New Manufacturing Process for Bread-Derived Carbon Electrodes with Enhanced Control over Micro-Topological Features

David Bujdos
Engineering
Faculty Advisor(s): Dr. Adam Wood

Innovations in commercially available electronic goods such as electric vehicles, solar cells, wearable technology, and smart devices have recharged the demand for raw materials to supply such products. These resources may be difficult to harvest or pose safety risks associated with their storage. Carbon-based electrodes have demonstrated strong viability as a substitute to their metallic counterparts; they can even be fabricated through the pyrolysis of waste bread. A new manufacturing process is developed to enhance the surface features of waste bread in the conversion from biomaterial to electrode. Through the process of reconstitution, the structural networks of bread and air are first reduced to a sand-like powder to lower its resistance to normal stress. The powder is then reconstituted with water and may be cast in a mold to take on a desired shape. After the mold is removed, the reconstituted bread can be pyrolyzed to produce electrodes of higher resolution than stamped bread. Three different test shapes (a sine, square, and saw wave) demonstrated that using reconstitution as a manufacturing process delivers significantly finer vertical features than stamped bread and scales in pyrolysis by a factor of 0.78.

25. Growth of bacteria in varied pH media

Andrew Bottino, Jonah Vaglia
Biology
Faculty Advisor(s): Dr. Jennifer Koehl

Lactobacillus rhamnosus is a Gram-positive probiotic found in the human digestive tract. *Pseudomonas aeruginosa* is a Gram-negative bacterium found in soil and natural aquatic systems like lakes and rivers but is known to cause infections in the lungs and other immunocompromised body parts. The purpose of this experiment was to measure the growth of these two bacteria in vitro biofilms cultured in acidic, basic, and neutral pH, relative to the normal lab media. Following two experimental trials, no significant difference (p greater than 0.05) was observed between the growth of *L. rhamnosus* and *P. aeruginosa* the change in pH also did not significantly affect the formation of the biofilms.

26. A Spray a day keeps the Biofilms away

Kendall Castor, Mei Jenkin-Andrews
Biology
Faculty Advisor(s): Dr. Jennifer Koehl

In this study, students determined which shower disinfectant to prevent the formation of shower biofilms. Biofilms that contain the Gram-positive bacterium, Staphylococcus aureus (S. aureus), are especially harmful as they can cause numerous health issues and are antibiotic resistance. In addition, biofilms can negatively affect a shower's function with reduced water flow (Proctor et al., 2018). However, with an efficient shower cleaner, there is a decreased chance of a biofilm forming (Koehl, 2023). The students had two hypotheses: if 10% bleach was the most effective shower disinfectant then observe the least number of biofilms present in the shower and vice versa for the FMO cleaner used in the dormitories. The students had one control group with saline and three experimental groups of FMO cleaner, 10% bleach, and Scrubbing Bubbles. On the first day, they made 0.5 McFarland Standard of S. aureus, then mixed a solution of TSB, inoculation, and treatment group and let that sit for 5 minutes, and finally, used the microdilution plate technique (Asc) and (Goodyear et al., 2018). Then, they next day, they quantified average colonies per dilutions (CFU/mL). After repeating these steps for two weeks, there were zero colonies formed from the FMO cleaner, 1,825,000 colonies formed from the Scrubbing Bubbles, 1,858,333 colonies formed from the 10% bleach, and 9,943,750 colonies formed

27. Synergistic Effect of NaCl and Herbicide on Tadpole Behavior

Nicola DiPaul
Biology
Faculty Advisor(s): Dr. James Kellam
A.J. Palumbo Student Research Endowment

This experiment is designed to show how tolerant Lithobates catesbeianus is to a combination of herbicide and NaCl that can be found in waterways throughout the country. We hope to gain understanding on how pollutants affect survivability of tadpoles. This will be determined by purposefully exposing tadpoles to either NaCl and/or diuron at varying concentration and then periodically testing their swimming speed, predator detection, mass, and mortality. These tests paint a picture of how these pollutants affect these tadpoles, both physically and behaviorally, and therefore, can be used to hypothesize about the survivability of these tadpoles in a non-laboratory setting. Based on the results from this section we can conclude that tadpoles of the species L. catesbeianus are not affected by realistic conditions for NaCl or the herbicide diuron. Based on this finding we can conclude that at the abundances tested, NaCl and diuron have no effect on the ability of tadpoles to grow, eat, and avoid predators. However, since this experiment was not able to continue until metamorphosis it is unclear how these chemicals would effect metamorphosis. Certain studies using mesocosms have shown that certain herbicides can affect different aspects in an aquatic community which can in turn cause a change in the abundances of tadpoles and their food, and for this reason further study is needed.

28. What's Lurkin' in the Curtain

Tanisha Grewal, Anna Kozemchok
Biology
Faculty Advisor(s): Dr. Jennifer Koehl

The purpose of this experiment was to determine which shower disinfectant would be most efficient in preventing the formation of biofilms. In this experiment the bacteria, Pseudomonas aeruginosa, was combined with different shower disinfectants: FMO school cleaner, 10% bleach solution, and scrubbing bubbles. The solution was left to sit for five minutes in order for the disinfectant to fully prevent as much growth as possible. Then a microdilution technique was used to determine which disinfectants prevented the most growth. Our results indicated that the school cleaner, FMO cleaner, was most efficient in preventing biofilm formation as 3.25x10^5 Colony Forming Units (CFUs) were produced, while the 10% bleach solution was least effective as it resulted in 1.21x10^7 CFUs.

29. Treatment of Eastern Hemlock Infected by Hemlock Woolly Adelgid or Scale Insects via Green Lacewing Predator

Emily Lentz
Biology
Faculty Advisor(s): Dr. Michelle Duennes
A.J. Palumbo Student Research Endowment

Major pests of eastern hemlock, Tsuga canadensis, that have caused significant impact on populations are the invasive hemlock woolly adelgid (HWA), Adelges tsugae, and other scale insects. The feeding of these pests causes significant needle loss, harming the tree populations. Green lacewings, Chrysoperla rufilabris, have been used as non-target predators to act as biological control agents by releasing natural predators of the pests to control infections and reduce the negative consequences of chemical treatment use. My experiments tested the effectiveness of green lacewings as biocontrol agents of HWA and other scale insect pests of hemlocks. Hemlock samples varying in pest density and chemical treatment for pests were brought into the lab to test the effectiveness of lacewings as biocontrol species. My study provides evidence that tree branches heavily infected by HWA lost less needles when the predator was introduced. However, pest coverage was not reduced with the introduction of HWA predators. It was concluded that the predator did not allow for HWA densities to increase, therefore reducing the number of needles lost. The eastern hemlock is a foundation species that provides unique ecological functions. It is important to improve the health of these important native trees by reducing HWA and scale insect infestations to maintain ecological balance.

30. Oxygen and carbon dioxide concentrations on Staphylococcus epidermidis growth

Nikhil Mohan, Domonkos Szilika
Biology
Faculty Advisor(s): Dr. Jennifer Koehl

Staphylococcus aureus is a Gram-positive facultative anaerobic bacterium. This bacterium is part of the normal human flora on the skin and mucous membranes; it particularly likes moist areas of the body. Facultative anaerobes grow in the presence of oxygen but also can, and prefer, to use either fermentation or anaerobic respiration without oxygen to generate ATP. This experiment was to examine S. epidermidis growth under different gas environments. The environments included high carbon dioxide, normal atmospheric oxygen, and no oxygen or anaerobic. It was hypothesized that the anaerobic environment will create more colony growth than the aerobic environment. The bacterium grew at all conditions and while colony growth was not significantly different, the colony morphology was slightly different. It was concluded that S. epidermidis can grow at all these environmental conditions.

31. Synthesis of Water Soluble Catalysts for use in Signal Enhancement by Reversible Exchange

Ruth Milne
Chemistry
Faculty Advisor(s): Dr. Jason Vohs

Signal Enhancement by Reversible Exchange (SABRE) is a relatively new process which seeks to increase the signal of an HNMR scan by artificially increasing the number of hydrogen atoms with a spin-up configuration (hyperpolarization). The process has three major components: para-hydrogen, a transition metal catalyst, and the substrate of study. Both para-hydrogen and the substrate bind to the catalyst, and the hydrogen on the substrate become hyperpolarized, via the "exchange" from the para-hydrogen. This temporary hyperpolarization allows for a greater HNMR signal. Current studies typically utilize an iridium-based catalyst that is stabilized by an N-heterocyclic carbene; the most common catalyst uses the 1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene carbene, or, IMes for short. IMes makes a versatile catalyst, but it is limited to non-aqueous solutions. This research explores two new catalysts, made with the water soluble carbenes 4-(1-Isopropylimidazolium-3-yl)butane-1-sulfonate and 3-(2-carboxyethyl)-1-methyl-1H-imidazol-3-ium chloride. There were three parts to the research process: the synthesis of the two carbenes, the synthesis of each carbene to an iridium catalyst, and the use of the catalyst in the SABRE process.

32. Decolonization of Ethnographic Artifacts in a College Collection

Kelsie Patton
Anthropology
Faculty Advisor(s): Dr. Elaine Bennett
A.J. Palumbo Student Research Endowment

Themes of colonialism loom in many natural history and anthropology exhibits whether it be through looted artifacts or insufficient labels. Many museums can thank colonialism for their existence. Efforts to decolonize the museum have just recently begun in the United States and abroad and will hopefully continue with the new generation of museum professionals. This poster will describe the approach of curating ethnographic artifact displays at a small liberal arts college in Western Pennsylvania. The displays contain important cultural material for several indigenous American groups and will be presented to visitors as such, acknowledging colonial impacts on those communities.

33. What will you do with that degree? Factors influencing students' higher education choices.

Madilyn Thompson
Anthropology
Faculty Advisor(s): Dr. Elaine Bennett

Choosing to pursue higher education is a big commitment and can be an exciting but also stressful time in a young adult's life. When choosing to go to a college or university after high school, one must make a decision what they would like to major in. This decision however does not always come quickly or with ease for some students. This can result in students declaring an undeclared major to start off their first semester(s) of college. At Saint Vincent College (SVC) there is an undeclared population that is worth learning about their experiences with choosing an undeclared major, their thought process of declaring a different major, and their experiences of being an undeclared major at SVC. This poster will demonstrate a literature review compiled, a methods section, results of my survey, and a summary on how the survey response rate could improve in the future.

34. 1 of 10,600: Federal Bureau of Investigations Honors Internship

Emily Fultz
Accounting
Faculty Advisor(s): Dr. Robert DePasquale

On June 6, 2022, I took my oath and had officially been sworn into the FBI as one of the thousands who had applied for the internship program. I spent 10 weeks at the Jackson, Mississippi field office working closely with Squad 12: White Collar Crime and Public Corruption. My time in Jackson was spent learning and understanding the roles of each squad within the office, as well as their satellite offices in Gulfport and Hattiesburg. Not every day at work was spent in my cubicle though. Some days were spent out of office at the Barnett Reservoir with Reservoir Police or assisting with ASAP training in Indian Country. I also had the opportunity to assist with programs within the office such as Teen Academy which allows selected teenagers the opportunity to come in the office and get a more in depth look at what the Bureau does and why it is important. Some of the cases that I had the opportunity to work on include the misuse of Paycheck Protection Program funds, mishandling federal funds related to state welfare programs, and conspiracy to commit healthcare fraud through the use of mail order pharmacies. Skills that I had the chance to acquire were open-source researching, using IBM i2 Analyst Notebook software, vouching and tracing transactions, and developing a professionally curious mind.

35. A Comparison of Lower Limb Strength Gains with Closed and Open Kinetic Chain Exercise

Caroline Mullineaux
Health Science
Faculty Advisor(s): Dr. Caryl Fish

Open kinetic chain exercise and closed kinetic chain exercise are important concepts in physical therapy that help determine patient plan of care and promote lower limb strength gains. An open kinetic chain exercise is one where movement of one joint is independent of all other joints on the kinetic chain. A closed kinetic chain exercise is one where movement of one joint is dependent on all of the other joints in the chain. The purpose of this comprehensive paper was to determine which type of kinetic chain exercise would promote the most lower limb strength gains. The findings in many primary and secondary sources show that closed kinetic chain exercise encourages the most strength gains while keeping post-surgical patients safe, improving balance, gait, range of motion, activities of daily life, and overall quality of life. The most substantial information that should be taken from these studies is that there are significant benefits in using closed kinetic chain exercise for rehabilitation programs with the goal of lower limb strength gains (Open kinetic chain should not be neglected, but rather used with great moderation). Overall, the information gathered in this comprehensive paper is important for practicing physical therapists to reduce the risk of lower limb injury, improve lower limb strength, and improve quality of life in all patients they encounter.

36. The Falcon and Falconer: The Resiliency of the Irish

Michael Astfalk
Core
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

By examining the folklore and history of Ireland, this study uses the symbolism of birds in Irish stories, artwork, and literature to find the core value of resiliency in Irish culture. Researching artwork, literature, and history as well as using observations and interviews in Ireland shows a common theme of birds reflecting the role of Ireland or her oppressors throughout Ireland's history and into the present day. The use of birds in folklore like the Children of Lir and the legend of the warrior Cu Chulainn instill the values of resilience and perseverance in the face of hardship. These stories maintain prominence even today. A sculpture depicting the Children of Lir is on permanent display at the famine memorial and the sculpture of Cu Chulainn commemorating the Easter Rising uprising at the Dublin General Post Office—the focal point of the Irish Revolution. These prominent symbols hold within them the narrative learned by children throughout Ireland of the country's continual survival under different colonial influences of the history of Ireland. It is Irish to remain steadfast to one's own uniquely Irish identity, beliefs, and customs even in the face of overwhelming odds.

37. Ó Sióga go dtí an bóthar

Keegan Burd
Core
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

This analysis of the evolution of the Irish public's views regarding fairies draws on folklore from ancient myth to modern retellings and superstition. Through artifact analysis and the collection of documents and oral folklore I investigate the Irish people's beliefs regarding fairies and how these beliefs have changed over time. While many of the modern public's views on fairies differ from the views of their ancestors, some aspects of both the stories themselves and the way the public interacts with these stories has remained the same for centuries.

38. Are You Related to Ireland's Greatest Warlord?

Giovanni Cicala
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

From research at Trinity College Dublin, Ireland, one in twelve men in Ireland share a Y chromosome with Niall Noígíallach, better known as Niall of the Nine Hostages, a late 4th century CE king who is said to have conquered the majority of Ireland, portions of Scotland, and attempted to raid parts of England and France. However, for over a millennium, Ireland's people and culture were suppressed by the Christians, Vikings, Normans, and finally the British. Much of the folklore, like Niall's legend and legacy, was altered, lost, or destroyed. Finally, it was revived at the beginning of the 20th century by Lady Gregory, Douglas Hyde, William Butler Yates, John Millington Synge, the Irish Folklore Commission, and recently the National Folklore Collection Project. To analyze the connection between the historical Niall Noígíallach and the modern legend of Niall of the Nine Hostages, I investigated documents pertaining to the oppression of the Irish people, I observed artifacts dating back to periods of oppression, and I also interviewed several Irish people about their knowledge of Ireland's oppression. From these methods, I conclude that the colonization of Ireland led to the initial loss of Irish folklore, then revitalization of sufficiently Irish stories, supporting the development of an uniquely Irish identity for not only the adults, but especially the children.

39. Folklore renewal: How technology makes Irish folk traditions accessible worldwide

Cameron Cox
Core
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

Irish folklore as a means of storytelling and identity is a core tenet of Irish culture. Technology and improved collection methods have made folklore more accessible to consumers all over the world. In 1937, an assembly formed by the Irish Folklore Commission (IFC) appointed 50,000 Irish schoolchildren to collect and document Irish folklore. These methods including 2,000,000 documents, 12,000 hours of sound recordings, and 80,000 photographs have been digitized, enabling researchers, students, and any modern folklorist to quickly quantify and distill the information. In this way, Irish folklore has been renewed and unrestricted by geography, time, and access. This could not be achieved, without the Irish's dedication to honoring the past, building community, and shared sacrifice.

40. Custodial Cleanliness: Task Analytic Instruction in Vocational Training

Rachel McGough, Brooke Himich
Education
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

One student in the Bearcat B.E.S.T transition program at Saint Vincent College expressed the desire to work in a custodial setting. In order to gain the necessary skills and experience, the student worked in Leander Hall of Saint Vincent College, which is similar to that of a hotel, under the guidance of job coaches. This project used an instructional plan and data collection to track his progress over the course of 4 weeks. Our goal was for the student to gain independence and generalize the skills that he learned in Leander Hall to future custodial employment opportunities.

41. Serving Up Success: a task analytic approach in vocational training in food services

Abigail Skundrich
Education
Faculty Advisor(s): Fr. Philip Kanfush O.S.B.

A student in the Bearcat BEST transition program at Saint Vincent College expressed a desire to work in a setting that has to do with food. In order to gain the necessary skills and experience, the student worked in the hot food/food prep section at a local grocery store under the guidance of job coaches. The project used a task-analytic instructional approach and data collection to track their progress. The goal for the student was to gain independence and the ability to prepare and package food, as well as generalize skills learned into his personal life.

42. Community and Identity at Saint Vincent College

Angelina Bucci, John Evans, Alyson Frank, Meredith Marsh, Olivia Persin, Scott Root, Jr., Dylan Slebodnik
Fred Rogers Center
Faculty Advisor(s): Dr. Dana Winters

43. Through the Lens of Fred Rogers: The Overlaps Between the Six Fundamentals of Learning and Growing

Morgan Constantino, Scott Root Jr.
Fred Rogers Institute
Faculty Advisor(s): Dr. Dana Winters

Throughout his life, Fred Rogers talked about six fundamentals that are important for a child's learning and growing. These fundamentals are Times of Solitude, Self-Worth, the Capacity to Look and Listen Carefully, Trust, Curiosity, and the Capacity to Play. This project presents how Fred Rogers described each one of the fundamentals through his many writings, speeches, letters, and other documents. We will explore how these fundamentals overlap to offer a new perspective on a child's learning and growing through research in the Fred Rogers Archive. Each of these fundamentals, both separately and together, can be used to help create a safe environment that allows children to grow and develop.

44. Mentorship program

Alison Mileca
Fred Rogers Leadership
Faculty Advisor(s): Other, Shelly Grooms

Over the course of the last several weeks I participated in a program offered by the Fred Rogers Institute that discussed topics that were intended to be for younger children, but we were exploring how they applied to college students. Those topics were: Self-Worth, Trust, Looking and Listening Carefully, Play, Curiosity, and Solitude. Thinking about these topics made me realize the need for more mentorship available to students on campus. I believe that students who come into college right out of high school are not emotionally or mentally prepared for the expectations of college life. This mentorship could occur in different ways. One possibility would be having young professionals that are specifically on campus to help mentor students for whatever they may need, not only academics. I believe it should be diverse and reflective of the overall student population. These mentors would be able to offer support in areas such as leadership, handing difficult situations, building relationships, time management, etc. I also think this could come in the form of peer mentors who are trained in these areas of need to offer support or friendship. These peer support students could also work directly with the high school seniors planning to come to Saint Vincent. This would help students build a stronger sense of the community available to them on campus and understand the expectations awaiting them. I am thinking about this from a first-hand perspective.