

Participant Abstracts

EMU Academic and Creative Excellence Festival 2025

Listings are in alphabetical order by the last name of the presenter. In the case of group projects, the entry is alphabetized under the name of the student who submitted the entry.

Oral Presentations

Using Python and math to build a Wordle Bot

Mariana Acosta

Faculty Mentor: Mark Sawin

Why pay for the New York Times Wordle Bot when you can build your own? This project explores the creation of a Wordle Bot in python that uses probability and word frequency analysis to make optimal guesses. The bot determines the best next word based on letter distributions and remaining possibilities. Plus, a campus survey investigates Wordle's grip on our daily routines—because we all need that one small win.

More or less human: The lure of technological innovations in Shelley's Frankenstein and Ishiguro's Klara and the Sun

Joyce Beachy

Faculty Mentor: Martha Eads

The novels Frankenstein and Klara and the Sun take place in different eras, but both include beings who are intelligent yet not quite human. Mary Shelley sets her novel Frankenstein in a Romantic landscape where society values technological advancements and individual achievements such as Victor Frankenstein's work to master the secrets of nature and give life to inanimate materials. Kazuo Ishiguro, in contrast, creates a world in Klara and the Sun that is far more technologically advanced. For instance, many parents embrace genetic editing to give their children a better chance at climbing the social ladder. These parents also rely on technology, such as Artificial Friends, to help raise their children and keep them from being lonely.

The two societies described in these novels differ significantly from each other, but both reflect similar concerns about the tendency of technological innovations to promise mastery over physical limitations, while isolating individuals and keeping them from flourishing in communities. Both novels invite readers to consider the question: What happens when society embraces technological innovations without discerning their potential to make us less human and more like the machines we already create?

Rescue

Joyce Beachy

Faculty Mentor: Chad Gusler

In this short work of fiction, a middle-aged woman receives the diagnosis no one wants to hear: pancreatic cancer. She and her husband choose to live the rest of her days on the North Carolina beach, where she hopes the beauty of the natural world will keep her mind off dying. But she can't keep her mind off the unresolved conflict with her daughter or the memories that still

haunt her from her own childhood. When the sea turtles come to nest, she is unsettled by what she sees as careless abandon of their young. But as she considers the turtles' perseverance and resilience, her perspectives on relationships and love begin to shift, and with this shift comes a glimmer of hope.

Book bans target LGBTQ+ stories and sex

Miranda Beidler

Faculty Mentor: Heike Peckruhn

Book bans are increasing in frequency and severity across the US, particularly in schools. PEN America, an organization that tracks book bans across the country, has outlined four types of book bans that take place in schools: banned in classrooms and libraries, banned in classrooms, banned in libraries, and banned pending investigation. Restrictions — placing books under certain guidelines that do not allow all students to access them — are almost more prevalent than book bans. In the 2023-24 school year, there were 10,046 instances of book bans, up from around 3,000 in 2022-23. The rise in bans, other statistics, and implications for teachers, parents and students will be discussed.

Conservation or colonization? Unpacking NGO influence in Hawai'i and Mozambique

Réka Bordás-Simon with Mukarabe Makinto-Inandava

Faculty Mentor: Timothy Seidel

Our research explores the perpetuation of neocolonialism by international NGOs, focusing on how these organizations negatively impact local sovereignty by imposing external agendas and values. Through comparative case studies of Hawai'i and Mozambique, we examine land governance, environmental conservation, post-conflict reconstruction, and the nuanced dynamics of foreign aid.

In Hawai'i, NGOs such as The Nature Conservancy and UNESCO manage significant conservation areas, often restricting Native Hawaiian access to ancestral lands under the rhetoric of environmental sustainability. The conflict surrounding the Thirty Meter Telescope (TMT) further illustrates how external scientific and developmental organizations prioritize Western frameworks, overlooking Indigenous governance and local cultural values. In Mozambique, we analyze similar patterns, highlighting how international NGOs involved in post-conflict reconstruction and conservation initiatives displace local communities and perpetuate dependency on foreign institutions through eco-tourism and development projects. Structured through five phases—narration, manifestation, inspiration, imagination, and application—our multimedia presentation employs interviews, visual storytelling, and detailed case analyses. We underscore local resistance movements, including Hawai'i's Kia'i Mauna movement and Mozambique's land sovereignty campaigns, demonstrating grassroots resilience and responses to NGO-driven neocolonial dynamics. Ultimately, our comparative approach seeks to reveal how NGO influence uniquely manifests within distinct geopolitical contexts—a U.S.-administered territory versus a post-colonial state—and offers critical insights for restoring local autonomy and agency.

Repatriation at Eastern Mennonite University: Learning from the past and seeking a collaborative future

Ella Brubaker

Faculty Mentor: Martha Eads

Calls for returning cultural items have increased in recent decades, moving from academic debates to public consciousness. Although more institutions are now aware of the legal obligations surrounding repatriation, defined as the return of cultural objects to the community of origin, recent scholarship has encouraged expanding beyond limitations of legal frameworks. This project will explore nuances of repatriation, focusing on Eastern Mennonite University (EMU) as a case study and will engage the issue of cultural sensitivity. This project will provide context on the Native American Graves Protection and Repatriation Act of 1990 and how it relates to institutional repatriation processes. The paper draws primarily from previous academic scholarship, primary sources, and informational interviews. At the root of this project is a call to learn with humility while raising awareness of nuances in repatriation efforts that expand the focus beyond the physical act of return. This project encourages institutions and individuals to learn from the past and engage in collaborative strategies to reduce future harm.

The role of food pantries in serving limited English proficiency populations

Mild Butsridoung with ML Lormejuste, Floribella Mendoza, Yeana Park

Faculty Mentor: Kate Clark

Food insecurity is a serious problem that affects many people, including those with limited English skills. Food pantries help people by providing essential food, but language barriers, cultural differences, and lack of outreach make it difficult for some to access the food they need. Individuals who access food pantries experience high levels of food insecurity with limited access to nutritious food, which can result in negative health impacts, even with the role played by food assistance programs in the mitigation of such issues. The cultural dimension of food insecurity of immigrants and refugees can further hinder access to acceptable and sufficient food. Enhancing the role of food pantries in serving immigrant communities requires effective interventions such as multilingual resources, culturally appropriate food options, and targeted community outreach programs. Collaborating with local organizations can improve accessibility and awareness. Additionally, providing translation services and nutrition education tailored to diverse dietary needs can empower immigrants to make informed food choices while fostering inclusivity and support. Making food pantries more accessible to people with limited English skills is important for fighting food insecurity. Efforts to ensure that food assistance programs are available to everyone help improve health and promote fairness within these communities. For nurses and other public health professionals, this highlights the importance of advocating for accessible resources, addressing cultural and language barriers, and supporting health education to improve overall well-being and reduce health disparities.

Liberation through song: Our musical creation of a better world

Reah Clymer

Faculty Mentor: Benjamin Bergey

This is an interactive presentation of songs and stories testifying to the liberative power of music. Reah will draw from her intercultural experiences in South Africa as well as her recent political involvement in Mennonite Action's Palestinian-solidarity work here in the U.S.

Promoting EMU: Marketing EMU to the students of tomorrow

Anne Marie Cornelius

Faculty Mentor: Mark Sawin

The goal of this project is to revitalize and enhance the marketing efforts of EMU through a comprehensive, multi-platform approach designed to attract prospective students and engage the broader community. This initiative will focus on improving the university's branding, digital presence, and student engagement, addressing the current gap in its marketing strategy. By leveraging social media, storytelling, and student-driven content, this project aims to increase visibility, improve reputation, and create a more inviting atmosphere for future students. The research methods will include content analysis of current university marketing materials, a review of successful case studies from peer institutions, and the design of new marketing strategies. Data collection will involve surveys and interviews with students, alumni, and faculty to better understand the perceptions of the university and identify areas for improvement. Key deliverables will include a revamped social media strategy, the development of an alumni storytelling campaign, working alongside the student ambassador program, and starting a potential digital podcast/video series featuring student experiences.

This project will draw on previous research in higher education marketing and social media engagement strategies to ensure its relevance and effectiveness. The findings will offer actionable insights for the university to strengthen its branding and marketing initiatives.

Co-participants in this project include Kate Szambecki as the project director, whose input and support will be invaluable for the successful execution of the strategies.

This project will be presented as part of the ACE Festival in the Spring semester, with an emphasis on the practical impact of improved marketing on EMU's recruitment and overall engagement.

Imperialism and resource exploitation in Central Africa, the Middle East, and Central America

Diego Crespo Guido with Hannah Gilman, Leslie Meija

Faculty Mentor: Timothy Seidel

Ever since the first humans stepped foot on this earth, we as mankind, have been looking for ways to survive and thrive. Back then, our ancestors realized that agriculture was an amazing way to grow food and not solely rely on hunting to survive. With this in mind, our ancestors migrated to places that would be convenient and fitting to growing crops and surviving so they built their lives around these places. Nonetheless, our ancestors never imagined that what could be a blessing to their lives, could also become their worst curse. The term "natural resource curse" refers to the phenomenon where resource-rich countries remain poor and less developed while resource-poor countries thrive. While some call it a curse, we call it exploitation, or, the acquisition and utilization of natural resources for economic or strategic purposes, often involving state actions to secure access and control over these resources benefitting elites, foreign corporations, or other outside powers. (Science Direct) This might sound as something that happened lots of years ago but unfortunately, it still happens and it's right on our faces. The harm that was created years ago still lingers on the countries who suffered from it and in some cases, freedom hasn't been an option. This project will explore the way western monetary imperialist powers exploit agricultural, mineral, and fossil fuel resources in three different geographic regions, bringing about dependency, economic and political instability, authoritarian

regimes and protracted violence. We conclude with transnational solidarities necessary to transform the current systems.

Power to the People: Reimagining the lens on American populism

Jason Dwyer

Faculty Mentor: Martha Eads

This research paper's goal is to re-envision the lens through which American voters view populism in American politics. Populism has been a factor in American political movements and has served as a unifying force and a driver of change within the American political scene. While some may view populism as a knee-jerk and emotional reaction to political frustration which can be easily exploited, this paper argues populism as an essential component of democratic institutions by focusing on how it is a grassroots, voice-for-the-common-person, disruptor of the status quo.

Drawing from scholarly journal articles and relevant studies, this research paper employs a historical research method, highlighting significant populist movements throughout American political history, such as the People's Party of the late 1800s, campaigns like Occupy Wall Street and the Tea Party movement of the early to mid-2000s, and Bernie Sanders' 2016 presidential run. These examples help to build the baseline foundation that populist movements arise out of a perceived "representation gap" (Oliver & Rahn, 2016) within American political parties.

Finally, this paper culminates in an examination of the present-day rise of President Donald Trump's Make America Great Again (MAGA) populist movement, which has galvanized a significant portion of the nation, bringing about a unifying yet radical force for change in the American political landscape.

Composting survey and demonstration

Grace Eye with Nick Arnold, Nate Lehman, Sierra McVey, Levi Myers

Faculty Mentor: Douglas Graber Neufeld

Eastern Mennonite University's Environmental Sustainability Capstone students have been working on local composting efforts in the Shenandoah Valley. They have focused on two initiatives: gauging general community interest in composting and establishing relationships between farmers and restaurants.

Students involved in gauging general community interest performed surveys over the spring semester. Initial surveys were conducted at the Harrisonburg City Public School's STEM day and used to refine the surveys later conducted at the five Harrisonburg Mobile Recycling unit locations. Students will share their findings with the City of Harrisonburg to inform future city-wide composting efforts.

Students involved in establishing farmer-restaurant relationships surveyed farmers and restaurants about their needs and willingness of composting restaurant scraps. The students then helped to connect willing farmers to willing restaurants. Guides for both restaurants and farmers were presented to each respective party, and helped to walk each through the process. Information will be shared with the City of Harrisonburg to encourage the continuation of this kind of process.

Students will share their experiences from this capstone, and reflect on their findings.

Apathy kills. . . but who cares: Peace and reconciliation through the lens of moral injury

Jeremy Fuller

Faculty Mentor: Stephanie Day Powell

There is a minority group in this country—and present at this institution—whose members are killed more than twice as often as any other demographic, but their plight is largely unnoticed. Over a 15-year-period more than 97,000 of these individuals have died, at an average of nearly 18 souls per day, yet the news and social media remain silent. What is the cause of such wanton death, and what can be done in the face of it? In the end, studies have concluded that these deaths are ultimately the result of a condition known as moral injury. It can be treated, and healing can be offered, if we simply care to do so.

In this project I will explore the source(s) of these moral injuries which will, in turn, help to describe their destructive and alienating nature. Ultimately, it will become clear we are all complicit in these deaths, we all share—at least in part—responsibility for these moral injuries. Once this groundwork is established, I will take a multidisciplinary approach to offer a vision of what reconciliation, healing, and peace could look like in this particular context. I will use my Christian background as the foundation for this vision. To this I will bring practices from clinical psychology, restorative justice, and expressive art therapy. In the end, just as we all share responsibility for these deaths and injuries, we have a responsibility to work towards healing and peace.

Settler coloniality in South Africa, Palestine, U.S. & Argentina

Sofia Garcia Pini with Jacob Sankara, CatiAdele Slater, Getachew Temare

Faculty Mentor: Timothy Seidel

Settler colonialism operates as a global system of dispossession and exploitation, with its impact felt across different regions, each shaped by unique histories yet interconnected through common capitalist and imperial logics. In the United States, settler colonialism is perpetuated through legal, educational, and cultural systems that marginalize Indigenous peoples, maintaining the belief that they are alien to the land they once inhabited. The doctrine of discovery, rooted in white supremacy and Christian imperialism, laid the foundation for ongoing dispossession and exclusion, which persists through modern structures of inequality. The settler colonial project in South Africa evolved from early mercantilist practices to more sophisticated capitalist exploitation under British rule. The entrenchment of apartheid policies cemented racial segregation, ensuring that Indigenous peoples remained economically disenfranchised, a legacy that persists in the neoliberal policies of today.

Palestine represents a uniquely violent form of settler colonialism, where the establishment of the state of Israel in 1948 was driven by an imperialist agenda that sought to dispossess and expel Palestinians from their land. The Nakba, or catastrophe, was a deliberate act of ethnic cleansing in service of a geopolitical and economic project that continues to exploit the region's resources and location. Finally, Argentina's settler colonial history is marked by the myth of "white Argentina," which erases Indigenous identities and narratives. From the early European incursions to 19th-century racial violence, colonial ideologies persist in shaping state policies that marginalize Indigenous and impoverished populations, further complicating efforts at restorative justice and decolonization.

Across these contexts, settler colonialism is not a thing of the past but an ongoing system that continues to influence the politics, economics, and social fabric of these regions. The global nature of settler colonialism, interwoven with imperial and capitalist ambitions, underscores the need for a unified approach to decolonization that addresses the structural violence and inequality faced by Indigenous peoples worldwide.

Comparative analysis of FoMO and mental health as key drivers of substance use among college students

Angel Hines

Faculty Mentor: Kristopher schmidt

Substance use remains a significant concern among college students, with athletes facing unique stressors that may amplify their vulnerability. This study examines the influence of Fear of Missing Out (FoMO) and mental health on substance use behaviors among collegiate athletes and non-athletes. A total of 110 participants (72 athletes, 38 non-athletes) completed surveys assessing FoMO, mental health symptoms, and substance use patterns. Results revealed that athletes reported significantly stronger FoMO-related behaviors, including greater pressure to attend substance-related social events and higher regret after engaging in substance use. Athletes were more influenced by FoMO to use substances compared to non-athletes. Mental health issues, such as depression and anxiety, were more prevalent in athletes, yet these challenges did not significantly drive substance use. Contrary to expectations, FoMO emerged as a more significant predictor of substance use for athletes, while non-athletes demonstrated similar substance use patterns tied to mental health struggles. Additionally, athletes reported higher consumption of alcohol and tobacco, whereas THC, illicit drug, and prescription drug use showed no significant differences between groups. These findings highlight the distinct roles of FoMO and mental health in shaping substance use behaviors. Addressing these psychological and social dynamics through targeted interventions could reduce substance use risks and promote well-being, particularly in collegiate athletic populations.

Pedestrian bridge design for the Virginia Mennonite Retirement Community

Adam Hoover with Mariana Acosta

Faculty Mentor: Stefano Colafranceschi

This presentation focuses on the design process and final design of the bridge Mana Acosta and I created for our senior capstone project. The project has spanned over the Fall and Spring semesters and has been assisted through the guidance of the members of JZ engineering. Content would include the surveying of the site at VMRC, calculations performed that influenced the design, effects of legal codes on the design, cost of the designs, and final drawings in AutoCAD of the finished designs.

Exploring the effects of censorship on student learning

Adesola Johnson

Faculty Mentor: Mark Sawin

Censorship in American society takes many forms, including book banning. While many argue that such bans violate their First, Fourth, and Fourteenth Amendment rights, legislators claim they are necessary to protect children from inappropriate content. However, the increasing

number of banned books written by BIPOC authors raises an important question: How does censorship affect the sharing of diverse stories? Books shape our worldview and expose us to different perspectives. Censorship not only limits access to diverse narratives, but also disrupts the exchange of information in society. By restricting these stories, book bans hinder efforts to foster cultural understanding and inclusivity in education.

Collective Tapestries: visual stories of the EMU community

Evan Kauffman

Faculty Mentor: Mark Sawin

For this project, EMU students, faculty, and staff were given a paper square and asked to create a drawing representing various aspects of their experiences here at EMU. These drawings have been combined together to tell a greater story.

Trauma-informed care

Jordan Kerr with Liza Churchill, Daniela Espinoza, Aixa Warren

Faculty Mentor: Kate Clark

We aim to increase awareness and expand knowledge of trauma-informed care (TIC), a technique that recognizes the impact of trauma and prioritizes relationship-building and resilience instead of solely treating trauma. TIC uses a holistic approach that acknowledges Adverse Childhood Experiences (ACEs). ACEs engage specifically with abuse, household dysfunction, and neglect and how they have a lifelong effect on brain development, mental health, and emotional wellness. These approaches are essential across healthcare, education, social services, and any type of interpersonal relationship. Unfortunately, even with supporting evidence, TIC and ACEs training are not a requirement for many different educational degrees, one of which being nursing programs. The lack of TIC and ACEs leads to retraumatization contributing to poor relationships and negative health outcomes. We aim to bring awareness and highlight the gaps in the lack of knowledge and implementation of TIC across the nursing scope of practice. Through doing this, we will advocate for inclusion of TIC and ACEs training in academic degrees and improve interpersonal relationships amongst various settings. We will execute this through examination of academic research, informant interviews, and personal experiences as nursing students.

Impacts of nursing shortages

Lydia Lee with Taylor Chandler, Trinity Price

Faculty Mentor: Kate Clark

Nursing shortages have been found to be a significant issue with negative consequences on the healthcare system and patient outcomes. Low staffing impacts the quality of care that is being provided and the environment in which nurses are working under. Nursing shortages in the United States have led to an increase in workloads, burnout, stress, decreased job satisfaction, and negative impacts on new graduate nurses. The impact of these shortages on patients is becoming more and more prevalent in healthcare systems today, and, in turn, is leading to longer hospital stays, increased mortality rates among patients, and decreased satisfaction among patients and their families. These issues should be addressed by improving nurse retention, lower nurse-to-patient ratios, more education, decreased demand on nurses during

their shifts, and increasing job satisfaction. These strategies will help ensure a safe and effective healthcare system and allow nurses to provide quality care to every patient, as well as improve the work environment for current nurses and reduce strain on new graduate nurses coming into the nursing progression.

Senior thesis: Love as Disgusting Bug

Alexis Lewis

Faculty Mentor: David Brennan

Senior Alexis Lewis will be reading a selection of poetry from her senior thesis, a chapbook of formally playful poems charting a spectrum of emotions and experiences discovered through love and romantic relationships.

Feathers and Faith: Contrasting case-studies in fact and fiction

Lydia Longacre

Faculty Mentor: Martha Eads

Many Mennonites conscientious objectors (COs) utilized farming in order to meet World War II (WWII) service requirements. Canadian Mennonite author Rudy Weibe highlights the moral dilemmas of farmers profiting during a time of extensive suffering in *Peace Shall Destroy Many*. In contrast to the withdrawn, selfish portrayal of Mennonites in *Peace Shall Destroy Many*, the Horace and Elizabeth Longacre story of Horace W. Longacre, Inc. shows how Mennonite conscientious objectors during WWII could use their circumstances to improve their communities and help others. The foundation of Horace W. Longacre, Inc. began in Pennsylvania when Horace returned to his farming roots as a CO, and it later grew into a large corporation. Company newsletters, books, interviews, and advertisements provide insight into the operation and values of the enterprise. Horace helped shape present day Franconia, PA, and his life with Elizabeth prompts personal reflection regarding living out convictions today.

A Gladiolus Flower

Keiry Martinez-Guevara

Faculty Mentor: Tara Kishbaugh

A writing prompt that will be orally presented about a life with cancer but not just cancer but motherhood, full time student and being a military wife. A poem or writing that expresses the hardships of life at a young age, receiving news no one expects and living life through the lens of cancer. To be heard is not to be seen, but to be seen is to be heard; the life that is impacted is a life that's changed others. Never let the life of simplicity be the only life you know, life is unknowingly giving and taking. I have mucinous adenocarcinoma, ovarian cancer, in other words. It was found early at stage 1c before reaching stage 2. The call for surgery was needed to remove a 15cm tumor in my left ovary that destroyed both the ovary and the fallopian tube. Oxaliplatin and Capecitabine were the chemo drugs of choice. Let my words describe my health while allowing you to imagine another world.

A rock and a hard space: Barriers to escaping the cycle of homelessness

Halie Mast with Mary Kate Bomberger, Rachel Hermosillo, Jenna Weaver

Faculty Mentor: Kate Clark

Homelessness is on the rise largely thanks to increasing housing costs coupled with decreased housing availability. Once in this cycle, it is hard to break and successfully exit homelessness. Compiling data from Sage Journals, the Department of Veterans Affairs, and others has allowed us to reflect on barriers that have become a part of recently housed people's lived experiences. Specific barriers and struggles include mental health disorders, lack of social support, employment challenges, lack of meaningful activities, and inadequate resources which can impair an individual's health; all of which can lead to a relapse back into homelessness. Based on this research, effective solutions include those that focus on grassroots support and empowerment for homeless and recently housed individuals. Our goal is to bring clarity to why the issue of homelessness is difficult to tackle and how exiting the cycle is often easier said than done.

Florida Keys education and internship experience

Sierra McVey

Faculty Mentor: Jim Yoder

I was able to experience an amazing opportunity in the Florida Keys this past fall semester. I took two marine science related courses, helped out in research projects among fellow students, and interned at a local coral restoration organization. The internship program focused on various fields, including marine biology, environmental conservation, and sustainable tourism. We gained hands-on experience through field research, data collection, and collaborative projects dedicated to preserving the delicate ecosystems of the Keys. The internship not only provided valuable professional skills but also offered a deep dive into the complexities of marine ecosystems, coastal management, and conservation efforts within one of the world's most biodiverse areas. This presentation will be a summary and explanation of everything I did through this program in the Florida Keys.

History of ecotourism and community involvement in West Virginia

Zoey Mongold

Faculty Mentor: Martha Eads

Ecotourism, or tourism to see natural areas and participate in outdoor activities, is one of the largest industries in West Virginia and the broader Appalachian region. Ecotourism originated with state parks built by the Civilian Conservation Corps (CCC) in the 1930s; however contemporary ecotourism leaders in West Virginia are not maximizing the potential of community involvement in CCC built-parks. This project explores the history of the CCC focusing on the history of Lost River State Park. The project also details how socioeconomic factors influenced local people's experiences with the CCC and includes observations by a CCC member's child. Additionally, this project will apply Fritsch and Johannsen's (2004) three key components of sustainable ecotourism: benefits to the environment, benefits to the local communities, and educational benefits to the visitor. Currently, many state parks in West Virginia and Appalachia as a whole are not meeting these three requirements. This project will also look into current programs in West Virginia supporting ecotourism and explore what could be done in Lost River State Park to meet the three components of beneficial ecotourism.

RNA-Seq meta-analysis of gene expression and exon usage of the *Caenorhabditis elegans* immune response

Ethan Neufeld

Faculty Mentor: Kristopher Schmidt

Caenorhabditis elegans is a small nematode which has long been used as a model organism by molecular and cellular biologists because of its determinant cell lineage, translucent outer cuticle, fecundity, and high degree of homology with humans. Nematodes and vertebrates share homologous genes encoding innate immunity-related proteins, allowing infection of *C. elegans* followed by RNA sequencing to provide uniquely valuable data showing which genes and exons within those genes are differentially regulated under infected conditions. The aim of this study was to analyze RNA sequencing data from several studies which exposed *C. elegans* to *P. aeruginosa* and *E. coli*, aggregating the data and providing more rigorous insights into innate immunity mechanisms in *C. elegans*. Our conclusions will be the basis of future wet lab research into innate immunity.

Synthesis of (R,E,E)-alpha-farnesene oxide

Ethan Neufeld with William Bartel

Faculty Mentor: Jim Yoder

This summer, Will Bartel and I had the opportunity to participate in synthetic organic chemistry research at Macquarie University through a National Science Foundation (NSF) IRES program run by Eastern Mennonite University. Working with Dr. Soo Jean Park, a chemical researcher at the Applied Biosciences Department, we conducted organic chemistry synthesis to produce the reactants necessary to create an insect pheromone.

While at Macquarie, Will and I primarily focused on synthesizing (R,E,E)- α -farnesene oxide, an attractant pheromone for the Banana Spotting Bug (*Amblyopelta lutescens lutescens*), and a racemic mixture of α -farnesene oxide. We made major progress synthesizing the R enantiomer of α -farnesene oxide, which entailed the difficult sulfonation of isoprene. Additionally, we synthesized 4-(4-hydroxy-3-nitro-phenyl)butan-2-one, which is an anti-fungal agent.

Can virtual Qigong exercise "Eight Pieces of Brocade" be effective as the in-person practice?

Kaden Schrock with Bethel Abiy, Chidubem Ekoh, Hollyn Miller, Ethan Neufeld, Roumany Sefin

Faculty Mentor: Hongtao Li

Literature on mind-body exercises, such as Qigong, has shown growing evidence of its widespread usage worldwide and its positive effects on public health. However, there is a need for more high-quality research to explore the mechanisms underlying its practice. We propose to examine the effectiveness of a virtual Qigong class compared to a face-to-face class (control group) on the campus of Eastern Mennonite University (EMU) in the spring of 2025. The study will assess the potential stress reduction effects after four weeks of practice. In collaboration with the Psychology Departments, we will also investigate the psychological benefits of the two groups simultaneously.

Who we are as educators? Reflective practice as identity formation

Skylar Stevens with Melly Davis, Arnayja Parker, Saniyah Smith

Faculty Mentor: Aundrea Smiley

Knowing who we are as educators stems from having confidence and knowledge of who we are as humans. When we combine these ideas together with theory and practice, we are able to create safe spaces as well as just and equitable learning environments with our students and colleagues. In ED 101, Exploring Teaching, as we imagine our future classrooms, we dig into our own personal educational journeys. Tied in with the values and culture of EMU and restorative justice in education (rje). We dig deep into research and text that allows us to focus on self-reflection and accountability in learning. We can ask ourselves the following questions as noted in *The Little Book of Restorative Justice in Education*: “Am I honoring? Am I measuring? What message am I sending?” (Evans & Vaandering, 2022). We can parallel those questions with the idea of being rooted in a deeper understanding of who we are, who we want to be, and who we want to become as those who educate - whether that is inside or outside the classroom (Rose, 2023). All of this research-based information points to answering the question of who we are as educators?

Eastern Mennonite University planetarium projector renovation and improvements

Adam Stoltzfus with Laura Benner, Hellena Gebremedhin, Micaiah Landis, Canyon Penner, Lleyton Stutzman, Rebecca Tezazu

Faculty Mentor: Stefano Colafranceschi

Eastern Mennonite University’s Planetarium has been unused since 2007, due to high maintenance costs and lack of faculty to run the Spitz A-4 projector. The projector, built in 1968 relies on an array of analog circuits all operated by a large control panel. Our Senior Capstone project aims to restore and modernize the projector’s functionality to make it more accessible and user-friendly while still having the ability to perform the shows it once did.

To Achieve this goal, new motors and calibration systems are installed alongside a new graphical user interface which simplifies operation requiring little knowledge of how the projector itself works. Additionally, we are fabricating a new mobile base to support the weight of the projector and allow for some storage. Finally due to the addition of windows in the space, curtains are required to stop light from entering. These will be custom, sewn from blackout fabric.

An important aspect of our project is that future students will be able to use and upgrade the projector. To facilitate this, we are creating thorough documentation to ensure that students will have a clear understanding of the inner workings of the projector. This project poses unique challenges, balancing upgrades and modernization with preservation and restoration. By addressing the aforementioned issues we hope to revitalize the planetarium projector and provide an educational resource for many.

The art of Spinning Babies® and its impacts on pregnancy and birth outcomes

Rachel Wheeler with Ginny Miller, Ava Shenk

Faculty Mentor: Kate Clark

The United States has increased cesarean section rates of about 32%. This is a much higher rate compared to the cesarean rates of roughly 15-19% of other developed countries. Literature supports that proper fetal positioning in the pelvis can positively impact childbirth, decreasing the rate of cesarean sections that result in negative birth outcomes. Spinning Babies® is a

nonpharmacological approach that promotes the ideal relationship between the body of the birthing person and the fetus. This technique is a new practice that was created with the goal of promoting comfort in pregnancy and improving birth outcomes by decreasing the rates of cesarean sections and complications in childbirth. Studies also show a positive correlation between early intervention to promote the position of the baby and better birth outcomes. These non-invasive techniques can be performed by the birthing person from the comfort of their own home, promoting repositioning of the fetus with the hopes of fewer complications during childbirth. Spinning Babies® is a newly formed pregnancy intervention which gives ample opportunity for continued research. The nurse's role is to educate the birthing person on the safe and proper ways to perform these maneuvers. The Spinning Babies® technique shows promise for the future of alternative and holistic prenatal care and childbirth.