04.25.2025

APEIRON

The Apeiron is an ancient term offered by Anaximander of Miletus in the 6th century B.C. that embraces the spirit of this forum. As with the Apeiron, which is infinite and boundless, all inclusive, eternal, and unaging, this forum is designed to be inclusive with respect to student research, scholarship, creative activities, and community engagement. It is dedicated to the proposition that students are capable of work that knows no limits and transcends all boundaries.

Each student participant in the Washburn University Apeiron has worked on his or her project under the supervision of a faculty mentor. The projects, which have been reviewed by the faculty, demonstrate creativity, originality, and a level of work superior to that normally expected of students. Today's presenters exemplify the spirit of the Apeiron.

www.washburn.edu/apeiron

The Greek Alphabet

Α α	Alpha	Ν ν	Nu
Β β	Beta	Ξ ξ	Xi
Γ γ	Gamma	Ο ο	Omicron
Δ δ	Delta	Π π	Pi
Ε ε	Epsilon	Ρ ρ	Rho
Ζ ζ	Zeta	Σ σ	Sigma
Η η	Eta	Τ τ	Tau
Θ θ	Theta	Υ υ	Upsilon
Ι ι	Iota	Φ ϕ	Phi
Κ κ	Kappa	Χ χ	Chi
Λ λ	Lambda	Ψ ψ	Psi
Μ μ	Mu	Ω ω	Omega

Original cover art designed by Bulat Ochirov.

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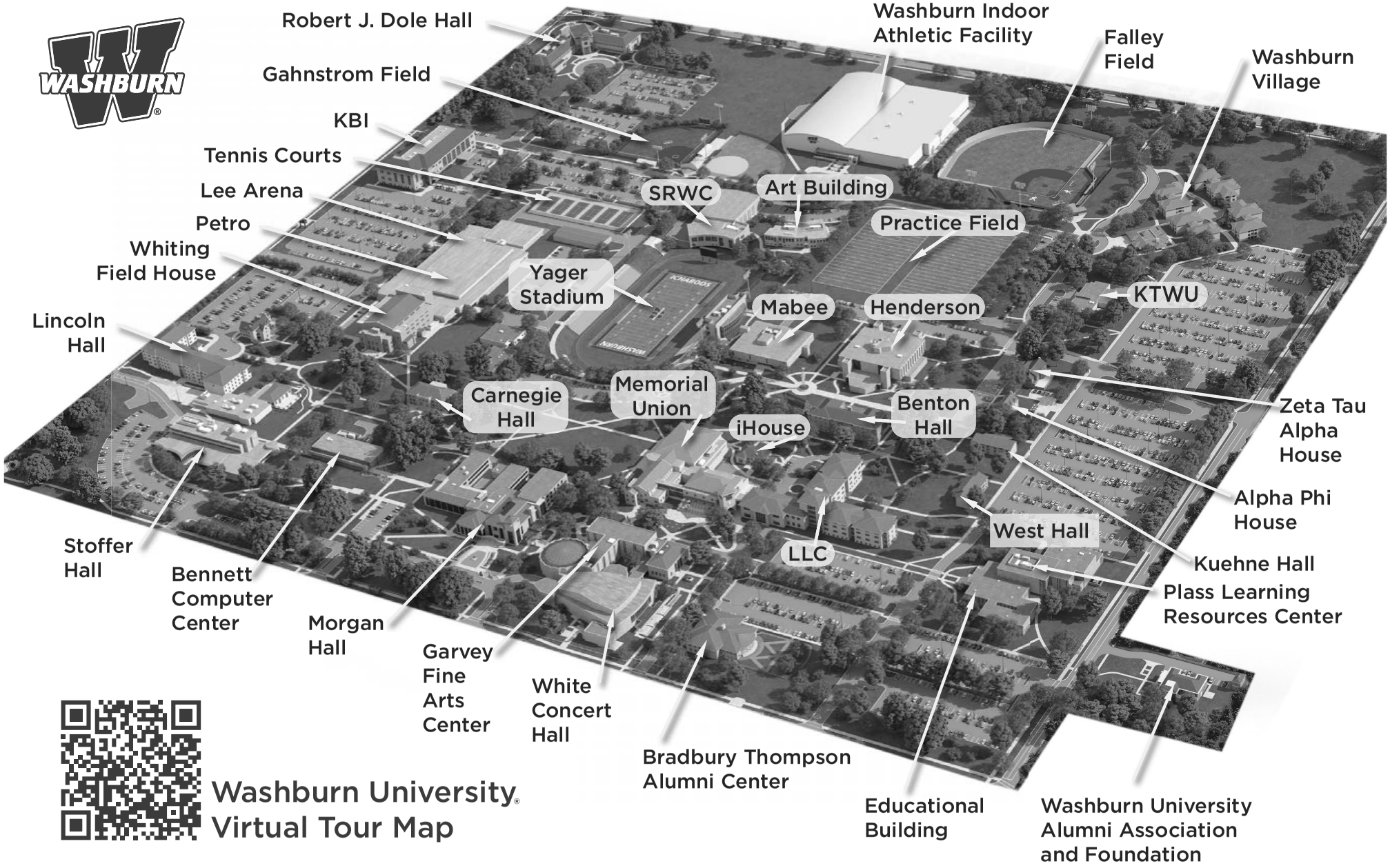

Washburn University Virtual Tour Map

Schedule of Events

April 25, 2025

9:30 a.m. — **Student Registration**
Memorial Union, Washburn A & B Lobby

10:30 a.m. – 12:00 p.m. — **Fine Arts Presentations (1)**
2:30 p.m. – 2:55 p.m. — **Fine Arts Presentations (2)**
Memorial Union, Kansas Room

12:30 p.m. – 2:55 p.m. — **Oral Presentations**
Henderson Learning Resources Center
Rooms 107, 118, 207, 303, 307, and 308

3:00 p.m. – 3:45 p.m. — **Welcome**
Memorial Union, Washburn B

Dr. John Fritch
Provost and Vice President for Academic Affairs

Dr. Courtney Sullivan
Chair, Apeiron Committee; Professor of French

Recognition of Student Designers
Rob Coffelt, Graphic Designer, University Relations
Student Designers: Alina Vetrova and Bulat Ochirov

Introduction of Distinguished Lecture
Dr. Eric Grospitch
Vice President for Student Life

Distinguished Lecture
Rick Barker
Associate Professor Emeritus of Computer Information Sciences

3:50 p.m. – 5:00 p.m. — **Poster Session and Reception**
Memorial Union, Washburn A
Poster Session 1 (odd-numbered posters): 3:50 p.m. – 4:25 p.m.
Poster Session 2 (even-numbered posters): 4:25 p.m. – 5:00 p.m.

Distinguished Lecture

"Life Long Learning: Continuous Learning Through the Lens of CS Innovations"

presented by

Rick Barker, M.A., M.S.

Associate Professor Emeritus of Computer Information Sciences

Memorial Union – Washburn B

3:00 p.m.

Rick Barker served Washburn University as a faculty member for 41 years. He retired in 2022 as an Associate Professor Emeritus of Computer Information Sciences. He enjoyed the challenges and joys of teaching, maintaining connections with former students, helping them find jobs and using these connections to help students find internships and jobs. His focus on student success resulted in many years of supporting various student organizations and activities, and attending sports, music, or theater events where his students were involved. He is enjoying his retirement on a small acreage south of Topeka.

He earned a BSEd, 1974, and a MA, 1975, in mathematics from Northeast Missouri State University. He then went to Kansas State University initially to work on a PhD in Mathematics, but after completing the coursework and passing a prelim, decided to follow his true passion and earned an MS in Computer Science in 1981. Shortly before completing that degree he was recruited by Dick Shermoen in the Mathematics Department at Washburn University. He is a member of ACM, ACM-SIGCSE and Phi Delta Kappa.

Mr. Barker has presented papers at national ACM-SIGCSE conferences and at several regional conferences. He has served on the coordinating committee for the regional computer education conference, Consortium for Computing Sciences in Colleges, CCSC:Central Plains region, from 2004 to 2018, where he created the student poster contest in 2008 for the conference and chaired the poster contest from 2008 through 2018.

Mr. Barker, as one of the first faculty at Washburn University with a computer science degree, was assigned to be the chair of the CS curriculum committee for his department. This committee had the task of crafting the curriculum needed to establish a Computer Information Science major, which was just being developed within the Mathematics Department upon his arrival. He took responsibility for an advisory council among local employers to ensure that Washburn graduates were learning the skills needed in the local business community, coordinating annually through the early 2000's. He has been the internship coordinator for his department from the late 1980s to the 2022, providing oversight and guidance to the students. His departmental service also included: starting the Computer Information Sciences student group with Dr. Billy Milner in the mid 1980s and served as the faculty advisor from its creation to 2022; serving as Computer Information Sciences advising coordinator from 2003 to 2022; mentoring a student who presented his research at Apeiron 2003; mentoring several students in independent studies that resulted in the students earning departmental honors at their graduation; and helping a group of 6 students attend the CCSC-Central Plains conference one year.

Mr. Barker's service to the College of Arts and Sciences included: coordinating the College of Arts and Sciences faculty advising team for incoming freshman summer advising and fall freshman orientations from

2004 through 2009; serving many years on the College Faculty Council and serving as chair of the curriculum and resources subcommittees; Director of Bachelor of Integrated Studies for several years in the early 2000s.

Mr. Barker's service to the University has also emphasized student recruitment and faculty governance, including: serving on Faculty Development committee, which was created to help faculty improve their teaching; participating in the new faculty mentor program as a senior faculty mentor 1998 to 2018; computer scoring the Super Saturday results for HiQ / Quest academic competition at Washburn University from early 1990s to 2016, which reduced time waiting for results while ensuring accuracy; serving as parliamentarian for General Faculty meetings; serving as the parliamentarian for the faculty senate from 2009 through 2012 and from 2016 through 2018. His service culminated in serving as president of the Washburn University Faculty Senate from May 2018 through May 2020, continuing to advise through the next year as the faculty and staff all worked hard to implement many changes to teaching methods in order to accommodate the health and safety needs brought on by the Covid-19 pandemic.

Other student-oriented service has included: serving on Administrative Board of the Campus Ministries at Washburn from 2001 to 2016; served on the Career Services advisory board; and attending all graduation ceremonies to celebrate his students' success, serving as an assistant Marshall since the early 2000s and the Grand Marshall for the 2020 and 2021 graduations.

In 2009, Rick Barker received the Muriel D. Clarke award, which is presented annually in April to one of the monthly honorees of the Student Life Achieving Excellence Award. This award honors the individual who demonstrates excellence in working with individual students, student groups and organizations.

Mr. Barker is honored to serve as the 2025 Apeiron Distinguished Speaker.

Fine Arts Presentations

10:30 a.m. – 12:00 p.m.
2:30 p.m. – 2:55 p.m.
Memorial Union, Kansas Room

▶ 10:30 a.m. – 11:10 a.m.

A New Era of Justice

Diondre Tyree and Khalani Britt
Performers: Jaxon Schroeder, Anna Stonebraker, Diondre Tyree, Matt Escobar, Paris Powell, Camille Cluke, Elijah Reed, Justise Mongold, Lynn Morford, Jalonda Mitchell-Valentine
Mentor: Julie Noonan, Music & Theatre

A new era of justice explores the trans-formative journey toward equality and education, centered on the landmark Plessy v. Ferguson case. It highlights the pivotal Supreme Court decision that dismantled public segregation, marking a significant milestone in the ongoing struggle for justice and civil rights.

▶ 11:15 a.m. – 12:00 p.m.

Exploring Glass as a Medium

Sam Snyder
Mentor: Marguerite Perret, Art

Glass continues to be relevant in historical and contemporary conversation when discussed as artwork. For centuries, stained glass has been a means of creating architectural and decorative features, from cathedrals like Notre-Dame to the rise of Tiffany lamps in the late nineteenth century. Understanding the relationship between the historical relevance of glass art and its methodology is essential in framing our attitudes toward a piece. As a contemporary artist, I sought to study and participate in the tradition of glass forms. My glasswork aimed to understand and enhance the task of creating glass art using different methods. I formulated pieces using a fusion of techniques that correspond to the mixture of media and methods endorsed in contemporary artwork. I created stained glass using two traditional techniques: leading and copper foiling. I kiln-formed glass to create the fused pieces displayed. My non-objective, abstract works focused on form rather than representation. Color theory enabled visual stability within my pieces, strengthening my understanding of how hue and scale impact viewers' perceptions. I drew great inspiration from Frank Lloyd Wright and the Cubists' use of shapes to make these forms into cohesive art. This project helped better shape my knowledge of what glass can let the audience experience and its historical significance. Now, I can successfully convey that through my work.

▶ 2:30 p.m. – 2:55 p.m.

Xochipilli

Flute: Ireland Colón, Rebecca McCreight
Clarinet: Sierra Breedlove
Trombone: Orion Craig
Percussion: Rashawn Alford, Cameron Arnold, Ayden Olguin, Carl Russell, Simon Walrod
Mentor: Anya Pogorelova, Music and Theatre

Authentic musical quotes being impossible, *Xochipilli* is the result of Carlos Chávez's thoughts on topics of Mexican antiquity and his admiration for pre-Cortesian sculpture and painting. This student ensemble has explored sounds and techniques that are not typically heard in the concert hall setting, even going as far as building their own percussion instruments in an effort to match the composer's intent as closely as possible.

Carmina Burana

Flute: Ray Manion, Naomi Meraz, Rebecca McCreight, Haily Vig
Clarinet: Sierra Breedlove, Ella Oldham
Bass Clarinet: Avery Anguiano, Katt Higgins
Saxophone: Nathan Alvarez, Emily Harmon, Yared Romo, Dason Tidwell
Mentor: Anya Pogorelova, Music and Theatre

The *Carmina Burana* manuscript includes a descriptive Latin subtitle, which translates to "Profane songs to be sung by soloists and chorus with an accompaniment of instruments and magic tableaux." Exactly what the composer meant by "magic tableaux" is open to interpretation. Today's performance is a contemporary re-imagining of *Carmina Burana*, originally composed for mass choir with symphony orchestra.

Xochipilli and *Carmina Burana* will be presented one more time as part of the Washburn Wind Ensemble "Being Human" concert on Friday, April 25th, 2025. The performance begins at 7:30 PM in White Concert Hall. The Washburn Wind Ensemble is proud to be a part of WUmester 2025, which invites us to reflect on our shared human qualities—empathy, creativity, morality—while we celebrate our diversity, contemplate our place in a more-than-human world, and craft more inclusive and sustainable ways of being human.

The Importance of Being Earnest by Oscar Wilde
Opening night: April 25 @ 7:30 pm
Also running: April 26, May 1, 2, 3 @ 7:30 pm and May 4 @ 2:00pm
Neese-Gray Theatre in Garvey Fine Arts Center

Schedule of Oral Presentations

(HC = Henderson Learning Resources Center)

Time/Location	Presenter	Presentation Title
12:30 pm – 12:50 pm		
HC 107	Tisha A. Prather, James J. Tanasyah, and Joshua Oscar Villanueva-Villagran	*HabitGuard Mobile App*
HC 303	Cameron A. Hagemaster	*The Role of France in European Defense*
HC 308	Dylan Coltin Dennis Rizzo	*Music of Kansas: How My Home Inspires My Composition*
12:55 pm – 1:15 pm		
HC 107	Jihwan Min, Juan M. Villa, and Yuhei Morimoto	*2048*
HC 207	Zoey Haugsness, Han Do Ngoc Bui, and Blake Scott	*Team Sierra's Quantitative Analysis of Kansas Department of Transportation's Traffic Volume & Sensors*
HC 303	Yuri Kauai KDC Lima	*The History of French Oligarchs in Guadeloupe*
HC 307	Samarii Berry, Raven Petty, DeMarques Hinds, and Deondre C. Morris	*Amplifying Our Narrative: Strategies of Advocacy and Representation*
HC 308	Mel Ingoldsby	*The Unreflected Subject: Depictions of Female Vampires in Victorian and Edwardian Fiction*
1:20 pm – 1:40 pm		
HC 107	Jeremy Low, Cameron A. Hagemaster, and Conner B. Chilson	*BANDiT*
HC 118	Alessandro Di Gregorio	*Replicating Studies Performed on the Universal Relations for the Increase in the Mass and Radius of a Rotating Neutron Star*
HC 207	Rylie Rumsey, Carson Haire, and Logan Bartlett	*Team Bravo's Analysis of Kansas Department of Transportation Traffic Sensor Data*
HC 303	Nathan Gomez	*Trouble in Paradise: Economic Challenges in Martinique and Guadeloupe*
HC 307	Alexis Mitchell, Choize Hysten, and Desiree Cain	*Charting New Paths: Innovation and Growth in Student Organizations*
HC 308	Maria Tardiff	*"A Time-Torn Man": Thomas Hardy at the Intersection of Victorian and Modernist Literature*
1:45 pm – 2:05 pm		
HC 107	Elaina Pan, James J. Tanasyah, and Yuhei Morimoto	*UI/UX Design for Mental Health: Surveying College Students to Shape the Future of Wearable Devices*
HC 118	Paul Kamp	*Science in Running: Data Analytics and Science to Improve Performance*
HC 207	Makayla Coffey, Wesley Ekstrand, and Urshula Manandhar	*Team Oscar: KDOT (Kansas Dept. of Transportation) Kansas Traffic Analysis*
HC 303	Carter Seth Hiebert	*An Examination of the Factors that Contribute to Human Trafficking within Central America and the Trafficking of Central Americans to*
HC 307	Deondre C. Morris	*S.T.E.M. Extraordinaires*
HC 308	Hannah Lynn Elliott	*Emotional and Mental Health While Leaving Foster Care*
2:10 pm – 2:30 pm		
HC 107	Prayaanshu Pradhan, Kevin Ong, and Utsav K C	*Generational Perception of Ransomware-as-a-Service (RaaS) and Attitudes Towards Ransomware Payments*
HC 118	Megan Allacher	*Why Can't You Just Say What You Mean?! An Analysis of Solving the Knights and Knaves Logic Puzzles*
HC 207	Sujane Singh Maharjan, Tate A. Schoffelman, and Shane Mullen	*Team Echo: KDOT (Kansas Dept. of Transportation) and an Investigation of Kansas Traffic*

HC 303	Charlize Easter	*Censorship, Book Bans, and the Marginalization of Diverse Voices in Literature*
HC 307	Dean Michael G. Aguon	*Community-Based HIV Prevention Strategies for African American Men Who Have Sex with Men*
HC 308	Sussana Ontiveros	*COVID-19's Effects on College Students in the United States*
2:35 pm – 2:55 pm		
HC 107	Cameron A. Hagemaster, Rajdeep Sah, Arpan Adhikari, and Ari Lee	*Generative AI in Higher Education: Student Usage, Faculty Perspectives, and Academic Impact*
HC 118	Bella M. Wood and Holly Anne Beelman	*Lyrical Memoirs in Response to Jess Zimmerman's "Women and Other Monsters: Building a New Mythology"*
HC 307	Desiree Cain	*Don't Touch My Hair: Exploring the Psychology of Beauty*

Oral Presentations

12:30 p.m. – 2:55 p.m.

Henderson Learning Resources Center

WTE denotes Washburn Transformational Experience *WUmester* denotes WUmester topic

Session α **Moderator: Nan Sun**

▶ 12:30 p.m. – 12:50 p.m. Henderson Learning Resources Center, Room 107

HabitGuard Mobile App

Tisha A. Prather, James J. Tanasyah, and Joshua Oscar Villanueva-Villagran
Mentor: Nan Sun, Computer Information Sciences

HabitGuard is a mobile application designed to help users manage their social and financial events through an intuitive calendar interface. Users can create personalized profiles with custom authentication, track their daily routines and financial transactions, and receive alerts based on their habitual patterns. The app provides notifications about account balances and upcoming credits and debits and offers financial planning suggestions. Additionally, HabitGuard includes features for setting reminders for important events and deadlines, ensuring users stay on top of their schedules. The app also supports data synchronization across multiple devices, allowing users to access their information seamlessly. HabitGuard was developed collaboratively using Android Studio, Google Firebase, and GitHub.

▶ 12:55 p.m. – 1:15 p.m. Henderson Learning Resources Center, Room 107

2048

Jihwan Min, Juan M. Villa, and Yuhei Morimoto
Mentor: Nan Sun, Computer Information Sciences

2048 is a sliding-tile puzzle game where players combine tiles with the same number by moving them in one of four directions: UP, DOWN, LEFT, or RIGHT. The goal of the game is to reach tile 2048 while managing limited spaces in a 4x4 grid. The game ends when there are no more moves possible, or if the player reaches 2048. Other game modes include a tutorial, 128, 256, 512, 1024, and Challenge mode. This game is created by using Visual Studio Code, Java, and GitHub.

▶ 1:20 p.m. – 1:40 p.m. Henderson Learning Resources Center, Room 107

BANDiT

Jeremy Low, Cameron A. Hagemaster, and Conner B. Chilson
Mentor: Nan Sun, Computer Information Sciences

BANDiT is a music-driven bullet-heaven video game inspired by Scott Pilgrim vs. The World, Vampire Survivors, and more. Users take on the role of the player, a one-person band striving to become the ultimate music legend by defeating members of the reigning champions in intense rhythm-based battles. Each level features a two dimensional open stage where the player battles

waves of enemies, collecting experience points to level up and unlocking new instruments — each adding unique attacks and sounds to the evolving soundtrack. At the end of the stage, a Galaga-inspired boss fight challenges the player to dodge incoming attacks and to strategize with their growing arsenal. Bandit was developed using the Godot 4.3 Engine and written in C#, JSON, and GDScript.

▶ 1:45 p.m. – 2:05 p.m. **Henderson Learning Resources Center, Room 107**

UI/UX Design for Mental Health: Surveying College Students to Shape the Future of Wearable Devices

Elaina Pan, James J. Tanasyah, and Yuhei Morimoto *WTE*
Mentor: Nan Sun, Computer Information Sciences

This study explores that user-centered UI/UX design in wearable devices can significantly improve mental health outcomes for college students. Through a survey of college students, we analyze their perceptions of wearable devices, behavioral interactions, and pinpoints in current designs. The findings inform a proposed UI/UX framework that addresses mental health needs, focusing on stress management, emotional feedback, and user engagement. By bridging design innovation with behavioral insights, this research demonstrates how intentional UI/UX design can create wearable technologies that actively support student well-being, offering actionable guidance for designers and developers.

▶ 2:10 p.m. – 2:30 p.m. **Henderson Learning Resources Center, Room 107**

Generational Perception of Ransomware-as-a-Service (RaaS) and Attitudes Towards Ransomware Payments

Prayaanshu Pradhan, Kevin Ong, and Utsav K C *WTE*
Mentor: Nan Sun, Computer Information Sciences

The purpose of this research is to determine whether there are generational differences in perceptions and attitudes towards Ransomware-as-a-Service (RaaS). RaaS is one of the growing cybersecurity threats. RaaS can enable individuals with no technical expertise to deploy ransomware attacks. We conduct a survey where participants from various age groups will be asked about their views on ransomware, their willingness to pay ransoms in a cyberattack, and the factors influencing their decisions. The research also tries to understand the motivation behind individuals who might think of using RaaS for financial or personal gain. We believe the results of this study will provide insights on how different generations perceive the risks of RaaS and contribute on cybersecurity awareness and policy development.

▶ 2:35 p.m. – 2:55 p.m. **Henderson Learning Resources Center, Room 107**

Generative AI in Higher Education: Student Usage, Faculty Perspectives, and Academic Impact

Cameron A. Hagemaster, Rajdeep Sah, Arpan Adhikari, and Ari Lee *WTE*
Mentor: Nan Sun, Computer Information Sciences

Generative artificial intelligence (AI) is reshaping higher education, sparking debate over its role in the classroom. Our study explores how college students and professors perceive the use of generative AI in academic settings. Through student surveys and faculty interviews, we examine patterns of AI usage, and the reasons students rely on these tools. We also assess the perceived impact of AI on academic performance, considering both benefits and drawbacks. By highlighting both student and faculty perspectives, this research provides valuable insights for educators and policymakers navigating AI's role in education. Our findings will contribute to ongoing discussions about AI's ethical implications, learning outcomes, and institutional policies in higher education.

Session β **Moderator: Jennifer Wagner**

▶ 1:20 p.m. – 1:40 p.m. **Henderson Learning Resources Center, Room 118**

Replicating Studies Performed on the Universal Relations for the Increase in the Mass and Radius of a Rotating Neutron Star

Alessandro Di Gregorio *WTE*
Mentor: Karen Camarda, Physics & Astronomy

Neutron star are dense objects. Their density does not compare to anything on Earth, therefore we do not know the fundamental relationship that dominates the structure of these stars. We are developing density and pressure relationship, called equations of states (EOS), to create models for making predictions to observations. Also, the mass of a rotating star was found to be larger than a non-rotating one, and the faster a star rotates the larger its equatorial radius is. In Konstantinou et al. (2022) it was found that mass and radius differences are insensitive to the equation of state of the neutron star. Hence, this independence stimulated the idea of possible universality. In their paper, Dr. Konstantinou and Dr. Morsink affirm that they have found a ratio of mass to radius constant on one of the constant-density sequences of neutron stars they studied. Our research was a collaborative effort, involving the creation of a program that generates piecewise polytropic and speed of sound parametrized EOS. This program, with its advanced algorithm, calculates properties such as pressure and energy density based on mass density and the constraints found in each type of EOS. Then, we used our results to investigate the two families of stars based on the parameters selected in Konstantinou et al.

▶ 1:45 p.m. – 2:05 p.m. **Henderson Learning Resources Center, Room 118**

Science in Running: Data Analytics and Science to Improve Performance

Paul Kamp
Mentor: Brian Thomas, Physics & Astronomy

I am a physics major, but since my goal after graduation is to go into biomechanics, I got the opportunity to work with the kinesiology department. The goal was to apply data analytics and physics/science to running. The idea was to test how efficient runners are at different cadences. This might sound simple, but it involves a lot of critical thinking, problem-solving, and work in the lab to collect data. At the moment, we are still in the process of collecting data. We have our first results, but the complexity of the problem requires as much data as possible, and even

with that, it will be hard to come up with clear conclusions. The human organism is super complex, and so many things can impact results that all we will be able to do is see a rough direction. Even after narrowing down subjects, there are still huge differences between individuals, and from the first results, we can tell that it would take a huge group to come up with clear conclusions.

▶ 2:10 p.m. – 2:30 p.m. **Henderson Learning Resources Center, Room 118**

Why Can't You Just Say What You Mean?! An Analysis of Solving the Knights and Knaves Logic Puzzles

Megan Allacher
Mentor: Jennifer Wagner, Mathematics and Statistics

Logic puzzles are a type of puzzle based around the concept of using logical and deductive reasoning to solve them, which is the process in which we analyze surrounding information to help form connections between what we know and what we are wanting to find. "Knights and Knaves" are a type of such puzzle. "Knights and Knaves"—a term coined by American Mathematician Raymond Smullyen—revolves around a story that takes place on an island in which only two types of people live—those who only tell the truth (knights) and those who only lie (knaves). Following this story are problems in which you are given statements said by inhabitants of this island. Using these statements, you must figure out what type—knight or knave—each person is. This capstone presentation focuses on a way to systematically solve such problems.

▶ 2:35 p.m. – 2:55 p.m. **Henderson Learning Resources Center, Room 118**

Lyrical Memoirs in Response to Jess Zimmerman's "Women and Other Monsters: Building a New Mythology"

Bella M. Wood and Holly Anne Beelman *WTE* *WUmester*
Mentor: Dennis Etzel Jr, English

Jess Zimmerman's makes a new call for a new mythology in her book "Women and Other Monsters" by first examining Greek myths where the men who wrote those stories often cast monsters as women. She argues that our culture's constructions of femininity continue to diminish and restrain women from agency and power. By embracing the monstrous, women can reexamine and reclaim "a female hero: one that looks a lot like a monster, with the agency and power to match." As the book description continues: "After seeing where compliance gets us—harassed, shut out, and ruled by predators—women have never been more ready to become repellent, fearsome, and ravenous." These two Washburn students engage with the book through their own stories, showing both their scholarly prowess and resilience to sexist oppression.

Session γ **Moderator: Pamela Schmidt**

▶ 12:55 p.m. – 1:15 p.m. **Henderson Learning Resources Center, Room 207**

Team Sierra's Quantitative Analysis of Kansas Department of Transportation's Traffic Volume & Sensors

Zoey Haugsness, Han Do Ngoc Bui, and Blake Scott *WTE*
Mentor: Pamela Schmidt, School of Business

In this data analytics capstone project, Team Sierra analyzed traffic sensor data from the Kansas Department of Transportation (KDOT) to create groupings of traffic data using traffic volume and sensor data collected from permanent traffic counters across Kansas. Our objective was to compare KDOT's current practices with federal traffic monitoring processes, such as the FHWA's Traffic Monitoring Guide (TMG), to identify differences and provide recommendations for improvement. In the first stage of the project, we used statistical methods such as k-means clustering to group sensors based on their traffic patterns and characteristics. By understanding why certain sensors are grouped together, we can identify key traffic patterns and anomalies. This is critical as the second stage of the project will apply these groupings to non-permanent or temporary sensors, as well as new sensors added to the network. Ultimately, these refined groupings will offer insights into how traffic data can be better utilized for reporting, planning, and decision-making at KDOT, improving both short-term traffic monitoring and long-term strategic planning.

▶ 1:20 p.m. – 1:40 p.m. **Henderson Learning Resources Center, Room 207**

Team Bravo's Analysis of Kansas Department of Transportation Traffic Sensor Data

Rylie Rumsey, Carson Haire, and Logan Bartlett
Mentor: Pamela Schmidt, School of Business

Team Bravo's project with the Kansas Department of Transportation (KDOT) focuses on classifying permanent traffic sensors based on traffic patterns. By analyzing vehicle counts over time, we aim to identify distinct sensor categories that reflect road usage trends. After cleansing our data, conducting exploratory analysis, and utilizing machine learning techniques like K-Means Clustering and Random Forest, we hope to develop a classification system to assist KDOT in categorizing their permanent sensors and better manage and monitor Kansas roadways. Our analysis examines key traffic metrics, including daily and seasonal fluctuations in vehicle counts and variations in traffic patterns throughout the day. Through clustering and predictive modeling, we provide insights that support infrastructure planning, resource allocation, and policy-making. This presentation will highlight our methodology, classification approach, and key findings, demonstrating how data-driven strategies can optimize transportation planning and improve roadway efficiency across Kansas.

▶ 1:45 p.m. – 2:05 p.m. **Henderson Learning Resources Center, Room 207**

Team Oscar: KDOT (Kansas Dept. of Transportation) Kansas Traffic Analysis

Makayla Coffey, Wesley Ekstrand, and Urshula Manandhar *WTE*
Mentor: Pamela Schmidt, School of Business

Traffic counters play a vital role in the Kansas Department of Transportation (KDOT) efforts to monitor and manage roadway usage across the state. This project explores how KDOT utilizes traffic counting technology to collect data on vehicle volume and classification which informs infrastructure planning, road maintenance, and traffic safety initiatives. By analyzing traffic data, we aim to assess trends in traffic flow, identify high-traffic areas, and evaluate the effectiveness of data-driven decision-making in transportation planning. Our research incorporates KDOT reports and public data of key locations where traffic counters are deployed. As part of our analysis, we conducted statistical descriptive analyses on traffic data to identify patterns, trends, and anomalies in vehicle movement across various locations in Kansas. By interpreting these statistical findings, we assess the effectiveness of KDOT's data collection methods and provide insights to potential improvements for traffic management. The findings will highlight the importance of traffic counters in shaping Kansas' transportation policies and offer recommendations for optimizing their use to improve road efficiency and safety.

▶ 2:10 p.m. – 2:30 p.m. **Henderson Learning Resources Center, Room 207**

Team Echo: KDOT (Kansas Dept. of Transportation) and an Investigation of Kansas Traffic

Sujane Singh Maharjan, Tate A. Schoffelman, and Shane Mullen
Mentor: Pamela Schmidt, School of Business

This project, conducted as part of the Data Analysis Practicum course, involves collaboration with the Kansas Department of Transportation (KDOT) to analyze traffic data and develop insights into roadway usage patterns. The focus is on understanding temporal traffic trends using data collected from Continuous Count Stations (CCSs) and short-term traffic volume counts. The objectives of this study include identifying peak traffic hours, tracking volume trends on specific roadway sections, and applying factor group assignments to improve traffic volume estimates. By clustering roads with similar traffic patterns, we anticipate a better accuracy in the estimation of annual average daily traffic (AADT). The research also seeks to develop strategies for locations where portable counters are impractical. Through this analysis, we will provide insightful information to KDOT for traffic forecasting, road planning, and long-term transportation planning. Our findings will enhance traffic movement, lane closure regulations, and efficiency in the transportation systems in Kansas.

Session δ **Moderator: Miguel González-Abellás**

▶ 12:30 p.m. – 12:50 p.m. **Henderson Learning Resources Center, Room 303**

The Role of France in European Defense

Cameron A. Hagemaster
Mentor: Courtney Sullivan, Modern Languages

This project explores France's role in European defense, focusing on its historical pursuit of strategic autonomy and ambition to lead European security initiatives. Using the war in Ukraine as a central case study, the analysis critically examines France's defense policies, leadership claims, and geopolitical dynamics within the European and global security landscape. By exploring France's historical approach to defense, its military-industrial influence, and its geopolitical aspirations, this thesis evaluates whether France can truly be the cornerstone of European defense or if its vision remains constrained by political and strategic realities.

▶ 12:55 p.m. – 1:15 p.m. **Henderson Learning Resources Center, Room 303**

The History of French Oligarchs in Guadeloupe

Yuri Kauai KDC Lima
Mentor: Courtney Sullivan, Modern Languages

During the Washburn University French Club's latest academic trip to Guadeloupe, a French overseas department in the Caribbean, we students had the opportunity to immerse ourselves in the island's rich history and its complex social and political dynamics. The topic that most intrigued me was the influence of the Békés, descendants of French colonists who have maintained significant financial control and power over the islands for centuries. The main topic of this presentation is the Békés' influence on the oligarchic power structures that still characterize Guadeloupe today. We'll look at how their control of essential sectors has allowed an elite class to maintain significant influence over the island's economy and society. We can gain a better understanding of the effects caused by colonialism on local power relations and the challenges faced in reaching better social and economic equality in that region by examining this history.

▶ 1:20 p.m. – 1:40 p.m. **Henderson Learning Resources Center, Room 303**

Trouble in Paradise: Economic Challenges in Martinique and Guadeloupe

Nathan Gomez *WTE*
Mentor: Courtney Sullivan, Modern Languages

This research examines the economic dynamics of Guadeloupe and Martinique, focusing on the role of tourism, agriculture, and the impact of their status as French overseas departments. Both islands heavily rely on tourism, which serves as a significant economic driver. However, the dependency on external markets and the environmental and social pressures associated with tourism growth present challenges. While tourism supports job creation and infrastructure development, it can exacerbate income inequality and strain local resources. Agriculture, particularly banana and rum production,

remains essential to the economies of both islands, but these industries face obstacles such as high production costs and competition from other regions. The islands' high cost of living, largely due to their reliance on imported goods, also contributes to social unrest, as seen in recent protests. Being French departments offers financial benefits, including subsidies and access to the European Union market. However, this status has led to tensions surrounding autonomy and the dominance of the Békés, a powerful group that controls much of the agricultural land, perpetuating economic inequalities.

▶ 1:45 p.m. – 2:05 p.m. **Henderson Learning Resources Center, Room 303**

An Examination of the Factors that Contribute to Human Trafficking within Central America and the Trafficking of Central Americans to Other Countries

Carter Seth Hiebert
Mentor: Miguel González-Abellás, Modern Languages

This paper examines the factors which contribute to the high rates of human trafficking within Central America and from Central America to other countries. Specifically it examines the human trafficking industry based on the laws of supply and demand. The paper focuses on those things which cause vulnerabilities for potential victims and lead to a higher demand from human trafficking like pornography or prostitution. While the paper considers human trafficking as a whole, there is a focus on sex trafficking because of its prevalence. Finally, the paper examines potential options to help reduce human trafficking in and from Central America.

▶ 2:10 p.m. – 2:30 p.m. **Henderson Learning Resources Center, Room 303**

Censorship, Book Bans, and the Marginalization of Diverse Voices in Literature

Charlize Easter *WTE*
Mentor: Kerry Wynn, History

Through an in-depth analysis of media coverage, government policies, and case studies, this study examines the motivations driving book bans and identifies the communities most adversely affected. The presentation delves into the far-reaching implications of these bans on authors, educators, and students, exposing the systemic inequities they reinforce and their broader impact on society.
By exploring the intersection of race, representation, and censorship, this research sheds light on the critical challenges to intellectual freedom and the persistent efforts to marginalize diverse voices in literature. The study culminates in actionable policy recommendations designed to uphold and promote inclusive storytelling within educational institutions and public libraries. Ultimately, it seeks to ensure that literature reflects and values the voices of all communities.

Session ε **Moderator: Adebanke Adebayo**

▶ **12:55 p.m. – 1:15 p.m.** **Henderson Learning Resources Center, Room 307**

Amplifying Our Narrative: Strategies of Advocacy and Representation

Samarii Berry, Raven Petty, DeMarques Hinds, and Deondre C. Morris
Mentor: Adebanke Adebayo, Communication Studies

Following the 48th Annual Big XII Conference on Black Student Government in Stillwater, Oklahoma, this panel presentation explores the critical themes of "Advocate" and "Black Voices Amplified." Students will share their insights into effective advocacy strategies and the importance of creating meaningful platforms for Black student voices within higher education institutions. Participants will discuss how the conference inspired new approaches to student advocacy, highlighting personal experiences and collective strategies for amplifying their voices. The presentation will examine practical methods for creating inclusive dialogue, addressing systemic challenges, and developing impactful leadership approaches that center Black student perspectives and experiences.

▶ **1:20 p.m. – 1:40 p.m.** **Henderson Learning Resources Center, Room 307**

Charting New Paths: Innovation and Growth in Student Organizations

Alexis Mitchell, Choize Hysten, and Desiree Cain
Mentor: Adebanke Adebayo, Communication Studies

Reflecting on the 48th Annual Big XII Conference on Black Student Government in Stillwater, Oklahoma, this panel presentation offers student participants a platform to share their transformative insights and learning experiences. Aligned with the conference theme "Innovate, Elevate, Advocate: Black Voices Amplified," the presentation will showcase the rich perspectives gained from meaningful interactions with peers, student leaders, and administrators across Big XII institutions. The presentation will explore how the conference experiences sparked new ideas for reimagining student governance, highlighting creative problem-solving techniques, and pathways for professional growth. Participants will discuss practical approaches to innovation within student organizations and reflect on personal development strategies that elevate leadership potential and institutional impact.

▶ **1:45 p.m. – 2:05 p.m.** **Henderson Learning Resources Center, Room 307**

S.T.E.M. Extraordinaires

Deondre C. Morris *WTE* *WUmester*
Mentor: Adebanke Adebayo, Communication Studies

I propose to conduct an exploratory study at the 48th Annual Big XII Conference on Black Student Government examining STEM career pathways among Black students. Working with the Washburn Black Student Union (WBSU), I will investigate the academic trajectories and motivational factors influencing Black students' pursuit of STEM careers. This exploratory study aims to identify successful pathways and support mechanisms that encourage Black student participation in STEM

fields. This data will provide valuable insights for developing targeted support programs and mentorship initiatives at Washburn University. Additionally, this study addresses an important gap in understanding the factors that both facilitate and hinder Black student engagement in STEM disciplines. The findings will contribute to broader discussions about diversity in STEM education and career development here at Washburn University.

▶ 2:10 p.m. – 2:30 p.m. **Henderson Learning Resources Center, Room 307**

Community-Based HIV Prevention Strategies for African American Men Who Have Sex with Men

Dean Michael G. Aguon *WUmester*
Mentor: Wendy Lynch, Art

The success of community-based organizations (CBOs) that provide HIV prevention services depends on strong evaluations to ensure the effective use of resources for HIV prevention strategies. However, there is lack of frameworks or process models to provide best practices for implementing HIV interventions by CBOs, and there is a gap in understanding regarding interventions focused on reducing HIV among African American men who have sex with men (MSM). This study addressed CBO employees' lived experiences within a single organization in Las Vegas, examining program creation, implementation, and measurable outcomes for the African American MSM population, which the research question was designed to answer. Mohr's program evaluation theory was used to analyze the CBO strategies in HIV prevention. A participatory approach was used to aid in the qualitative analysis process and assess CBO program impact. Five CBO employees provided information regarding why African American MSM continue to experience a high rate of HIV infection. The results illustrated three themes: (a) relationships, (b) resources, and (c) messaging. The findings point to the importance of ensuring the effectiveness of HIV/AIDS programs specific to African American MSM. New insights from the study may bring positive social change by influencing policies and procedures as CBO leaders seek to improve the impact of their organizations on the communities they serve.

▶ 2:35 p.m. – 2:55 p.m. **Henderson Learning Resources Center, Room 307**

Don't Touch My Hair: Exploring the Psychology of Beauty

Desiree Cain
Mentor: Adebanke Adebayo, Communication Studies

This presentation will examine the complex psychological of beauty as it relates to hair, with a specific focus on how hairstyling influences self-perception and social interactions. Drawing from both established research literature and interviews, I will discuss the "dress for success" paradigm through the lens of hair presentation, examining how hairstyle choices influence first impressions, perceived competence, and social interactions in professional settings. This exploration has significant implications for understanding identity construction, mood, self-care as psychological intervention, and the social psychology of appearance-based judgment.

Session ζ **Moderator: Erin Chamberlain**

▶ 12:30 p.m. – 12:50 p.m. **Henderson Learning Resources Center, Room 308**

Music of Kansas: How My Home Inspires My Composition

Dylan Coltin Dennis Rizzo *WTE* *WUmester*
Mentor: Julie Noonan, Music & Theatre

Growing up in Kansas is something I am extremely proud of. Most people might not say the same and view this state as a pass over state when traveling to get somewhere better, but for me there is pride in being here. There is something so beautiful when you look at the natural world in a different perspective, and for me Kansas exemplifies that. While a field of nothing may look boring, when you imagine it to be beautiful - it is. This feeling is something I try to emulate in my compositions, using the state I grew up in as a catalyst for my art. Within this presentation I will show you two pieces of mine and take time to talk about things I did to inspire the midwestern landscape or feeling, as well as share my compositional process in composing each piece and my approach to growth within ourselves while composing.

▶ 12:55 p.m. – 1:15 p.m. **Henderson Learning Resources Center, Room 308**

The Unreflected Subject: Depictions of Female Vampires in Victorian and Edwardian Fiction

Mel Ingoldsby
Mentor: Erin Chamberlain, English

Often dismissed as sensationalist or hack writing, vampire fiction has nonetheless allowed generations of authors the freedom to explore potentially subversive and taboo topics such as morality, sexuality, and religion. This flexibility allows the literary vampire to function as a metaphor that can be best understood as a reflection of the cultural concerns of the time in which a text was written. Fictional depictions of this supernatural figure developed in the Victorian and Edwardian eras, periods in which rapid social change heightened and sharpened cultural anxieties. This presentation examines the ways in which the female vampire emerged as a means of exploring fears regarding changing gender roles that arose as a result of industrialization and increasing urbanization.

▶ 1:20 p.m. – 1:40 p.m. **Henderson Learning Resources Center, Room 308**

"A Time-Torn Man": Thomas Hardy at the Intersection of Victorian and Modernist Literature

Maria Tardiff *WTE*
Mentor: Kara Kendall-Morwick, English

In my presentation I will discuss Thomas Hardy's unique role in literary history as a bridge between Victorian and Modernist literature. I will use evidence primarily from Hardy's 1895 novel *Jude the Obscure*, especially focusing on Jude as a character who embodies the conflict between Victorian sensibilities and Modern innovations that Hardy's writing represents. I will also incorporate some of

Hardy's poetry and use it as a point of comparison between Victorian poetry and Modernist poetry, thereby revealing the starker contrast between the two periods that Hardy straddles. The main purpose of my presentation is to give focus to a literary figure often overlooked for his unique position between two eras. Informed by the changing desires and global fluctuations around the turn of the 20th century, Hardy's work is rich for its contemplation of human nature and made richer by the frustrations it raises between conforming to the past or greeting the future, and *Jude the Obscure* shows Hardy at his best exposing this in-between realm.

▶ 1:45 p.m. – 2:05 p.m. **Henderson Learning Resources Center, Room 308**

Emotional and Mental Health While Leaving Foster Care

Hannah Lynn Elliott
Mentor: Ayah Wakkad, English

How does foster care affect children's mental and emotional health when leaving and what can officials and social workers do to help? I will be going over the lasting impacts that are made on children who leave the foster care system. The presentation will show the profound effects leaving the system has on foster kids. I will go over how foster care does leave lasting impacts on the children, how social workers and officials can help with the kids mental health, supporting the children when leaving the system, and navigating them through society.

▶ 2:10 p.m. – 2:30 p.m. **Henderson Learning Resources Center, Room 308**

COVID-19's Effects on College Students in the United States

Sussana Ontiveros
Mentor: Ayah Wakkad, English

In 2020, Coronavirus spread in the United States, and the nation was alerted of what was to come. In March of the very year, the nation was shut down and everyone was instructed to stay inside. Stores, schools, universities, everything remained closed for months. Universities moved in-person classes online, which made many college students feel unmotivated. Many researchers became intrigued and began studying the impact of COVID-19 on college students all over the nation, and many came to similar results. Surveys and studies demonstrate that COVID-19 impacted college students' physical and mental health. To this day, universities are working on recovering from this life-threatening pandemic and helping their students, professors, and employees. How else has COVID-19 impacted college students?

Poster Presentations

3:50 p.m. – 5:00 p.m.

Memorial Union, Washburn A

Poster Session 1 (odd-numbered posters): 3:50 p.m. – 4:25 p.m.
Poster Session 2 (even-numbered posters): 4:25 p.m. – 5:00 p.m.

WTE denotes Washburn Transformational Experience *WUmester* denotes WUmester topic

1

Paths of Parenting: A Choose Your Own Adventure Guide

Giovonna Rodriguez
Mentor: Tracy Routsong, Communication Studies

Through the lens of human development, this project allows individuals to test parenting paths through an interacting, Choose Your Own Adventure, approach. Those interacting can not only choose paths and approaches to see what outcomes might occur but also return to the beginning and try again in a non-judgmental environment.

2

How Reed-Solomon Codes Detect and Correct Errors: A Hands-On Demonstration

Dusti Johnson
Mentor: Bruce Mechtly, Computer Information Sciences

Error correction is essential for ensuring reliable digital communication and data storage. Reed-Solomon (RS) codes are a widely used error correction technique found in QR codes, CDs/DVDs, Blu-ray discs, and deep-space transmissions, where data corruption from noise or physical damage can render information unreadable. This study explores the mathematical foundation of RS codes, specifically their ability to detect and correct burst errors using polynomial division over Galois Fields of order 2^8 ($GF(2^8)$). By encoding data as polynomials and performing arithmetic within $GF(2^8)$, RS codes enable fast and efficient error detection and correction at the hardware level. Through a Java-based application, we demonstrate the encoding, error injection, and decoding process, revealing how syndrome calculation and polynomial division identify and correct errors. Our results demonstrate the efficiency of RS codes in recovering lost data, such as restoring content from a scratched disc or reconstructing missing segments in a damaged QR code. Understanding these principles provides insight into the critical role RS codes play in ensuring reliable communication and data storage in an increasingly digital world.

3

A Mental Health Journey: Observations of Activities and Strategies Designed to Promote Self-Improved Mood and Motivation

Riley Athy-Sedbrook
Mentor: Tracy Routsong, Communication Studies

Using a vlog format, this project discusses the challenges surrounding mental health as a college student. Topics include time, money, and motivation, as well as a discussion of daily activities aimed at better mental health. The goal is to create a realistic vlog that depicts one person's mental health

journey, and the impact of activities touted to promote bettering one's mental health such as journaling, exercise, mindfulness, etc.

4

Balancing the Scales: Addressing Hypertension Risk and Health Disparities in PREP For Black MSM

Dean Michael G. Aguon *WUmester*
Mentor: Michelle Heusi, School of Nursing

HIV disproportionately affects Black men who have sex with men (MSM), a group already facing significant health disparities, including higher rates of hypertension and cardiovascular disease. While HIV pre-exposure prophylaxis (PrEP) has been a breakthrough, emerging research links tenofovir alafenamide fumarate (TAF) to increased hypertension and cardiometabolic risks. Using Mohr's Program Evaluation Theory, this systematic review examines TAF-related hypertension risks and their impact on Black MSM's health and PrEP access. It applies the CDC's Four Pillars—Diagnose, Treat, Prevent, and Respond—to promote equitable, culturally competent HIV prevention strategies. Barriers to safer PrEP alternatives, such as tenofovir disoproxil fumarate (TDF) or injectable cabotegravir, stem from healthcare inequities and economic constraints. Synthesizing peer-reviewed studies and community data, this review calls for CDC guideline revisions, advocacy for safer PrEP options, and expanded culturally competent services through community-based organizations. Targeted public health policies and nursing advocacy are crucial to addressing hypertension risks and systemic inequities, ensuring equitable PrEP access, and advancing the goal of a 90% reduction in new HIV infections by 2030.

5

A Phenomenological Study on Nurses' Perception of Compensation Received During COVID-19 Pandemic

Dean Michael G. Aguon *WUmester*
Mentor: Wendy Lynch, Art

The COVID-19 pandemic has created intense pressure on our society and the economy in many ways. Many industries were severely impacted, especially the healthcare industry. In this study, we conducted a qualitative phenomenological study to learn about the nurses' perception of their compensation during the pandemic. Since nurses are the critical front-line workers during the pandemic, it is vital to ensure their well-being in many aspects. Our study can help to improve the quality of the healthcare system at the same time, lower the turnover. During COVID-19, the nurses have been facing intense pressure on their mental health at work. Moreover, they believe that there should be more incentive in terms of financial and recognition for their work and receive more care from upper management.

6

Keys to Two Worlds

Britney Kiamco *WTE*
Mentor: Georgina Tenny, Modern Languages

As a Spanish major with a minor in sociology, I have always been fascinated by how culture shapes an individual's identity. This project explores the experiences of Hispanics with immigrant parents as they navigate two worlds: Hispanic and American culture. Through interviews with four individuals, I filmed a documentary that captures their perspectives on being a bridge between two cultures. Inspired by their stories, I expressed each individual's unique experience through mixed media artwork. Alongside the documentary and artwork, I wrote an essay reflecting on the interviews, my artistic process, and the insights I gained. This project aims to emphasize the challenges of cultural duality and how individuals with immigrant backgrounds have balanced their identities throughout their lives.

7

Building Social Skills and Supportive Relationships at Family Service and Guidance Center

Destinee Warner *WTE*
Mentor: Julie Boydston, Psychology

I am completing an internship at Family Service and Guidance Center. I am working in the Early Childhood Intervention (ECIP) and School Outreach Services (SOS) departments. I am also researching information on play therapy for young children, parent-child interaction therapy and school and community based interventions for children who are experiencing mental health related challenges. I will complete 150 hours at this site and finding at least 10 journal articles on these topics.

8

Perceptions of Feedback: How Peers View Professor Versus Peer Feedback

Alyssa JaNae Hutcherson *WTE*
Mentor: Tucker Jones, Psychology

Feedback is a critical tool in education, influencing motivation, academic performance, and learning outcomes. However, its effects on academic achievement gaps, particularly in relation to cultural and contextual factors, have not been fully explored. This study examines students' attitudes toward feedback and how it is received from various sources, offering insights into how feedback is interpreted across diverse student groups. More specifically, this study explores students' perceptions of feedback from peers and professors and evaluates the perceived usefulness and motivational impact of feedback from these specific sources. Understanding how feedback can be adapted to meet the needs of diverse students is essential. Research shows that poorly delivered or overwhelming feedback can harm academic performance and potentially reinforce stereotype threats (Yeager et al., 2014; Ryan & Deci, 2017). This study uses a survey where participants are assigned feedback vignettes from peers or professors and are then asked to evaluate the feedback based on trust, empathy, and likelihood of incorporating the feedback into future work. Findings can help educators adjust feedback strategies to foster a more inclusive environment that supports motivation

and achievement. The research also has the potential to guide future studies on culturally responsive feedback for neurodiverse and culturally diverse students.

9

From Reactive to Proactive: Parent Education and the Prevention of Abusive Head Trauma in Newborns and Young Children

Emily Grace Keck *WTE*
Mentor: Lara Rivera, School of Nursing

Abusive head trauma (AHT), or shaken baby syndrome (SBS), is the leading cause of traumatic death in infancy. This project examines current education given to parents and caregivers and compares them to what is supported in literature, with the goal of identifying areas of improvement for SBS teaching programs. The COVID-19 pandemic highlighted the need for more resources and education for parents, and research has thrived in recent years as a result—producing substantially positive patient outcomes. Evidence-based methods, such as instructional formats, peer counseling hotlines, and simulation-based research have been shown to improve knowledge and reduce AHT incidence. Collaboration with local hospitals, health departments and educators to spread awareness ensures the use of supported methods. Nurses play a critical role in educating parents, making a lasting impact on healthcare; as a future medical provider my goal is to create the precedent of compassionate care, especially for our most vulnerable patients. By implementing evidence-based education, healthcare professionals can significantly prevent AHT and improve the lives of infants and young children.

10

Communicating Through Sales and Training: My Internship Experience

Alexandra M. Carlow-Phillis
Mentor: James Schnoebelen, Communication Studies

My presentation will give an overview of my internship at Club Car Wash. Throughout my internship I was able to build sales training programs, learn how to communicate with different behavioral styles using DISC assessments, and create a proposal to develop learning needs for the staff. By completing these tasks, I was able to expand my knowledge on many skills that I can use in the communication field in the future. Throughout this presentation I will also be explaining what communication terms and observations I utilized while completing my internship.

11

Specific Solutions for Panic Disorder

Sae Seino *WTE*
Mentor: Angela Duncan, Psychology

My presentation is based on a literature review that explores the causes of panic disorder and coping strategies used in daily life. Panic disorder is an anxiety disorder characterized by sudden and unpredictable symptoms, which can significantly affect an individual's daily functioning, relationships, and mental health. This literature review examines complex factors contributing to

panic disorder, including genetic predispositions, environmental stressors, and psychological vulnerabilities. Using databases from Washburn University and Google Scholar, at least ten peer-reviewed articles were analyzed to understand the underlying mechanisms of panic disorder and to evaluate effective treatment approaches. Special attention is given to exposure therapy, a widely used intervention for panic disorder. A 2007 randomized controlled trial conducted in Germany found that patients accompanied by a therapist were more likely to improve their panic symptoms in public settings compared to those who administered the therapy on their own. However, due to individual differences among therapists, and factors such as patient motivation and expectations, further long-term studies are needed. This literature review concludes that exposure therapy is a promising treatment for helping individuals manage anxiety-inducing situations and regain control over their fears. In the future, research should examine alternative treatment models such as self-guided or digital interventions that can offer greater accessibility and personalization.

12

Testing the Effects of Salt Pollution on Aquatic Communities in Urban Topeka Streams

Jacob C. Hanna *WTE*
Mentor: Jason Emry, Biology

Algae plays a vital role as primary producers for aquatic ecosystems converting sunlight into usable energy for other organisms. However, pollution like ionic pollution from road salting, urban development, or industrial activity has been shown to pose a significant threat to the health of aquatic ecosystems. This study investigates whether salinity has a similar detrimental impact on the overall biomass and diversity of aquatic algae found in Topeka lakes and streams. Water samples were collected from 4 different freshwater sites in Topeka and combined to create a sample representative of Topeka creek water. The samples were collected in January and February where overall diversity and biomass was low. Therefore, the stock was then spiked with samples collected in early March. This addition boosted the biomass and diversity of the stock but ensured that it was still composed of representative species of the area. The stock water was then included in individual replica tanks which were set up to mimic creek conditions and allow for biomass growth. The findings will contribute to better understanding how ionic pollution from salinity affects freshwater ecosystems and their ability to support diverse biological communities. This will offer insight into the health of urban creeks in Topeka.

13

Coaches Vs Athletes: The Impact Of Coach-Athlete Communication Styles And Feedback Approaches On Athletes Performance

Jett Buck, Kuyper Kendall, and Ashton Jenkins
Mentor: Adebanke Adebayo, Communication Studies

Studies have been done on performance and player anxiety working in unison with the communicative relationship between players and their coaches. The problem is coaches' stress can affect an athlete's anxiety levels, which can affect their athletic performance. Using social support theory, this study seeks to address the important communication relationship between players and coaches, especially during high-stress situations. We can conduct in-depth interviews with athletes during their seasons, capturing real-time experiences and responses to coaching communication. And examine how specific coach-athlete communication strategies either mitigate or exacerbate

anxiety, ultimately affecting athletes' performance. Proposed findings and recommendations will be discussed.

14

Exploring Proxemics in Relational Conflict and Dissolution in Romantic College Relationships

Macyn Felix
Mentor: Adebanke Adebayo, Communication Studies

Proxemics play a vital role in shaping romantic college interactions, yet misunderstandings of these nonverbal cues can significantly harm relationships. This study explores how proxemics—knowledge and use of space—can negatively affect relationships (Frauendorfer, Schmid Mast, Nguyen, & Gatica-Perez, 2014). Drawing on Relational Dynamics Theory and Knapps Model of Coming Together and Coming Apart, this research examines factors that contribute to misinterpretation, including contextual variations, and individual biases (Matsumoto, Frank, & Hwang, 2013). The findings will offer practical recommendations for improving awareness and understanding of proxemics in romantic college relationships, ultimately fostering healthier and more effective relationships after conflict and dissolution.

15

Coffee Shops in Topeka: A Marketing and Business Analysis

Hannah Meng
Mentor: Tracy Routsong, Communication Studies

This essay will explore the various marketing and business strategies of local coffee establishments in Topeka, Kansas. After understanding the current marketing and business concepts of these coffee shops, a further analysis can be constructed to potentially suggest marketing strategies that could help better market each business's operation.

16

Modular Learning: Filling in the Gaps

Payton McHarg, Alexis Tanguma, and Hannah Meng
Mentor: Tracy Routsong, Communication Studies

Classroom 2 Community was a curriculum designed in collaboration with the Schools of Nursing and Business, and the department of Communication Studies. It was designed to assist students to learn a wide array of information created to enhance undergraduate education for those interested in careers engaging with people and community projects.

17

Intrauterine Genetic Therapy: Revolutionizing Fetal Medicine

Annaka Haynes *WTE*
Mentor: Lara Rivera, School of Nursing

Finding cures to devastating genetic disorders is becoming tangible thanks to the endless possibilities with genetic manipulation therapy. Fatal diagnoses such as Spinal Muscular Atrophy and Cystic Fibrosis are now transforming into more manageable chronic illnesses. Intrauterine genetic therapy (IUGT) is a medical approach that delivers therapeutic genes to developing fetuses for the prevention of complications associated with genetic disorders. Prenatal screenings for genetic anomalies allow for earlier implementation of genetic altering methods. Currently, there are two genetic therapies that have been approved by the U.S. Food and Drug Administration for in vivo treatment. With continuing research, the future of genetic medicine has the potential to save lives and prevent further disruptions in health.

18

Atrial Fibrillation Complication Management: The Role of The Watchman Device

Abigail G. Rowe *WTE*
Mentor: Crystal Stevens, School of Nursing

This scholarly WTE project integrates practice, theory, and research to enhance nursing knowledge about atrial fibrillation and the critical role of the Watchman device in preventing complications. The project explores atrial fibrillation by examining its causes, electrocardiogram (ECG) interpretation, clinical significance, signs and symptoms, and associated complications. Furthermore, it addresses preventive strategies alongside treatment and management options, with particular attention given to general methods and an in-depth exploration of the Watchman device. By adopting this comprehensive approach, the project aspires to contribute significantly to understanding and managing atrial fibrillation within clinical practice.

19

Postpartum Hemorrhage: Risk Factors, Management Strategies, and Outcomes

McKynsey Henry *WTE*
Mentor: Lara Rivera, School of Nursing

Postpartum hemorrhage (PPH) is a leading cause of maternal morbidity and mortality worldwide. "Annually, these preventable events are the cause of one-fourth of maternal deaths worldwide and 12% of maternal deaths in the United States" (Evensen et al., 2017). Postpartum hemorrhage is defined as excessive bleeding following childbirth. PPH is usually classified as primary or secondary, with primary PPH occurring within the first 24 hours after delivery, while secondary PPH takes place between 24 hours and 12 weeks postpartum. This condition can result from a variety of factors, including uterine atony, trauma during delivery, retained placenta, or coagulation disorders.

20

From Farm to Field: The Trajectory of Dominican Baseball Players

Emily N. Swickard *WTE*
Mentor: Georgina Tenny, Modern Languages

Players from the Dominican Republic have historically always been the largest percentage of non-American born players in the MLB. In this essay, I examine the history of baseball and how it gained popularity in Latin America and specifically the Dominican Republic. I then examine the farm team system, looking at why and how there is consistently so much talent coming from such a small country. I then look at some case studies of Dominican players who have had great success in the MLB and how they have impacted the game. Finally, I examine the relationship between the MLB and the Dominican Republic and discuss flaws in the system and what needs to change.

21

Nutritional Needs of Breastfeeding Women: A Comparative Analysis with Non-Breastfeeding Women

Breanna M. Schroeder *WTE*
Mentor: Lara Rivera, School of Nursing

Due to physiological changes associated with lactation, breastfeeding women have unique nutritional requirements that differ from those of non-breastfeeding women. These include increased caloric intake, specific vitamin and mineral needs, and fluid requirements. This paper aims to explore and compare the nutritional needs of breastfeeding and non-breastfeeding women using scientific research and clinical guidelines set by evidence-based practice.

22

"There's Nothing in Topeka!": Developing a Guide for Community Outreach

Adriana Danae Camacho Chevannier *WTE* *WUmester*
Mentor: Jason Miller, Sociology & Anthropology

Topekans are starved for community engagement and outreach events. However, there is a significant gap in how these events reach the locals. This creates a need for leaders at all levels of the community and government to understand their neighbors first in future event plans.
I have developed a guide that can be implemeted in future workshops for community members and leaders, so that they may apply extensive outreach strategies.

23

Exploring the Changes in U.S Prisons Through the Lens of Midwestern Correctional Officers

Rebecca Schleif and Elena Toenjes *WTE*
Mentor: Patricia Dahl, Criminal Justice and Legal Studies

This project investigates various changes within U.S. prison facilities over the years, focusing on both the improvements and persistent challenges in corrections. The research seeks to highlight

advancements in correctional practices while pinpointing areas that still require reform to ensure more effective and humane systems. Centered in a Midwestern state, this study employs a mixed-methods approach, blending a thorough review of scholarly literature with qualitative interviews of correctional officers who have been employed in prison facilities. These interviews, conducted through semi-structured questions both in-person and via email, will offer firsthand perspectives on the evolving practices and challenges within prison systems. The literature review and interview data will be compared and analyzed for recurring patterns and themes. The project aims to provide insights into current practices, contributing to the broader discussion on prison reform and criminal justice policy. The findings of this study will inform policymakers, prison administrators, and stakeholders about opportunities for meaningful reform and enhance the overall understanding of how the prison system has evolved and what steps can be taken to improve it further. This research emphasizes the need for continuous evaluation of correctional systems to promote the wellbeing and safety of both inmates and staff.

24

Qualitative Analysis of Hair Samples Treated with Over-the-Counter Hair Products

Gaea Gratiae T. Tradio
Mentor: Holly O'Neill, Chemistry

The analysis of different biological fluids and samples for detection of different drugs and their metabolites have been a forensic research focal point for many decades. While urine and blood have been commonly analyzed for drug detection, the interest in hair analysis has been rapidly growing. Hair displays many advantages over urine and blood due to its easy collection and its ability to retain most drugs and their metabolites for longer periods of time. Hair is also relatively easier to collect in comparison to other biological samples. However, there has been minimal research performed on the effects of over-the-counter hair products on hair samples and how these products affect drug detection. This study was an attempt to determine the qualitative and potential quantitative effects of using over-the-counter hair products on hair samples through the usage of a gas chromatography tandem mass spectrometry (GC/MS). Hair samples were collected randomly from a third-party source and were decontaminated and treated with varying over-the-counter products: Head & Shoulders Shampoo, Olaplex Shampoo, Paul Mitchell Shampoo, Shimmer Lights lightener and developer, and L'Oreal Paris Excellence Cream in Medium Brown. Research from this study showed that greater amounts of nonamide, squalene, octocrylene and cholesterol were commonly found on treated hair samples compared with untreated hair samples.

25

A Study of the Morphological Effects of Potential Detox Hair Treatments Using Polarized Light Microscopy

Mia Z. Wendt
Mentor: Holly O'Neill, Chemistry

Hair samples are often used for drug testing to identify the presence and habitual use of controlled substances, especially since hair will retain controlled substances for a longer time than bodily fluids. However, there is not much research regarding whether "detoxifying" agents or other hair treatments can potentially remove the drug trace or alter the morphological features of human hair during the detox process. This study aimed to use polarized light microscopy and scale casting to determine any morphological changes that may be due to a variety of chemical hair treatments.

In this study, hair samples were collected from a third-party source and treated with a variety of over-the-counter products: Heads & Shoulders Shampoo, Olaplex Shampoo, Paul Mitchell Shampoo, Shimmer Lights lightener and developer, and L'Oreal Paris Excellence Cream in Medium Brown. The physical structure of the hair was examined both before and after treatment. It was apparent that the hair dyes and bleaching, which results in oxidation of the hair (especially under alkaline conditions), lead to significant changes in the morphology of hair. The hair samples that were treated with dye or bleaching chemicals resulted in some differences in their point of extinction, inference colors, and general color appearance.

26

Characterization of Cellulose-Producing Bacteria Isolated from Kombucha

Mia Z. Wendt, Rhen Calhoon, Alexander Holmes, and Carson E. Matlock
Mentor: Susan Bjerke, Biology

Kombucha is a bubbly probiotic drink containing microorganisms beneficial to gut health. It is produced using a symbiotic culture of bacteria and yeast cells (SCOBY), a microbiological community composed of cellulose fibers that hold the cells together to form a matrix. For this research, two bacterial isolates were obtained from a local kombucha sample and later confirmed to produce cellulose during growth. Such confirmation of cellulose production was determined through cellulose assays, Fourier transform infrared (FTIR) spectroscopy, and fluorescent dye media. After the determination of cellulose production, methods of identifying the two isolates began. This research has identified the first bacterial isolate to be a member of the *Komagataeibacter* genus using DNA sequencing. *Komagataeibacter* is a group of bacterial species known to readily produce cellulose during growth. The next step in this ongoing research project is to identify the second bacterial isolate. The second bacterial isolate demonstrates similar characteristics to that of the first but displays slight differences in growth, leading to the indication that the two bacterial isolates are likely different strains of *Komagataeibacter*. This continued research will allow for further exploration of bacterial cellulose and its usefulness in a variety of applications such as wound care, administration of medications, and as a green alternative to plant-derived cellulose.

27

Team Sierra's Quantitative Analysis of the Kansas Department of Transportation's Traffic and Sensor Data

Zoey Haugsness, Blake Scott, and Han Do Ngoc Bui *WTE*
Mentor: Pamela Schmidt, School of Business

In this data analytics capstone project, Team Sierra analyzed traffic sensor data from the Kansas Department of Transportation (KDOT) to create groupings of traffic data using traffic volume and sensor data collected from permanent traffic counters across Kansas. Our objective was to compare KDOT's current practices with federal traffic monitoring processes, such as the FHWA's Traffic Monitoring Guide (TMG), to identify differences and provide recommendations for improvement. In the first stage of the project, we used statistical methods such as k-means clustering to group sensors based on their traffic patterns and characteristics. By understanding why certain sensors are grouped together, we can identify key traffic patterns and anomalies. This is critical as the second stage of the project will apply these groupings to non-permanent or temporary sensors, as well as new sensors added to the network. Ultimately, these refined groupings will offer insights into how

traffic data can be better utilized for reporting, planning, and decision-making at KDOT, improving both short-term traffic monitoring and long-term strategic planning.

28

How French Expands One's Knowledge of the World

Angel M. Resendiz *WTE*
Mentor: Courtney Sullivan, Modern Languages

French is a language that's spoken by 320 million people according to the Organization of International Francophonie. While Washburn University offers multiple courses for people to expand their knowledge of the language, the same cannot be said for courses over the history of French overseas territories and their cultures. Despite this, the French club members and I were determined to learn more about these lands and arranged a week-long study-abroad trip to Guadeloupe, otherwise known as "butterfly island," due to its shape. While the experiences gave us major insight to what the island looked like, knowledge of the French language endowed members of the group with the abilities to communicate in meaningful ways with local inhabitants in ways that expanded our group's knowledge of this tiny island in ways that would be irreplicable had we only understood English. Some key examples include a delicious meal at a restaurant and a meaningful interaction with the chef and his staff at the end of the night, teaching us not only about restaurant culture but local customs specific to Guadeloupe. Our visit to the memorial ACTe educated us on the extensive history of racism both on the island and around the world. The personal study session with a Guadeloupean professor gave us an extensive lecture about the town of Pointe-à-Pitre, as well as a small lesson on Creole (the island's other language).

29

Strategic Development and Implementation of a Notice of Funding Opportunity

Audrey R. Mott *WTE*
Mentor: Julie Boydston, Psychology

A Notice of Funding Opportunity (NOFO) is a public announcement that informs potential applicants about the availability of funding, the eligibility requirements, application process, and evaluation criteria. It serves as a formal invitation for organizations or individuals to apply for grants or financial assistance. Throughout my internship with United Way of Kaw Valley, I had the opportunity to gain hands-on experience in the grant-making process, from drafting and structuring the NOFO, to ensuring its alignment with funding priorities. This project involved coordinating key stakeholders, researching best practices, and helping streamline the application and review process to maximize accessibility and impact. Through my presentation, I hope to provide insight into how a well-structured NOFO can drive meaningful investments and support important initiatives.

30

YWCA Kids Quest: Benefits of Before and After School Programs

Jacenda Schnacker *WTE*
Mentor: Julie Boydston, Psychology

This semester I have decided to complete an internship at the YWCA Kids Quest. By the end of the semester I will have completed 150 hours at my internship site. Along with my internship I am also completing a research project over what the benefits of before and after school programs are.

31

The Effects of Peer-Mentorship on First Year Undergraduate Women

Lauren Mehnert *WTE*
Mentor: Julie Boydston, Psychology

Through my internship with Christian Challenge at Washburn, I have had lots of experience in the practice and idea of "mentorship." My goal was to study the effects of mentorship and the benefits for first year undergraduate women through weekly meetings with five students and studying the peer-reviewed literature on existing mentorship programs. Christian Challenge is a campus ministry organization that exists to support students in their personal, spiritual, educational, and emotional lives. It provides community, encouragement, and a multitude of resources for students in the Washburn community.

32

The Clubhouse Model: A Breakthrough to Community and Resilience for People with Mental Illnesses

Emma E. Bluml *WTE*
Mentor: Julie Boydston, Psychology

In our individualistic society, the importance of community is often neglected. This can be especially troubling for people with severe mental illnesses, where isolation and loneliness are often symptoms of a disorder, but also negatively affect the person with mental illness. The Breakthrough House Clubhouse, also known as the Lotus House, in Topeka, KS, is just one of the organizations trying to alleviate some of these symptoms and negative effects. I am completing my 150 hours of internship at the Breakthrough House Clubhouse. While emphasizing community, Clubhouses also expose members to a simulated working condition, as well as help the members obtain and retain jobs within the community. People with mental illness are often pushed to the margins of society, and the Clubhouse model works to bridge that gap to give their members purpose, obtain employment, and independence. I am researching information on the Clubhouse model, community, and human resilience and finding at least 10 journal articles on this topic.

33

Speech and Behavior Improvement with Intervention in Children with Autism

Karla I. Mercado Morales *WTE*
Mentor: Julie Boydston, Psychology

In this presentation, I will be sharing different ways in which we can help improve behaviors and speech in kids who have autism. I will be talking about how these different approaches can be helpful for them and how the family plays a role in the child's improvement as well, and how it is important to reinforce those behaviors.

34

Cultural Constructs of Emotion: How Life Experiences Shape Social Responses and Perceptions of Reality

TyJuana Watson *WUmester*
Mentor: Adebanke Adebayo, Communication Studies

This research will explore how our backgrounds and experiences impact how we understand emotional behavior and will eventually affect perceptions of reality. The basic point behind this idea is that human beings come to understand the world through their personal and social experiences. This study examines how our experiences affect our grasp of feelings and how we behave in terms of emotion in society, and it also considers what cultural values mean for communication and the expectations we have of others. In order to learn more about this mind question, the study will use a combination of methods: surveys to establish how different cultures interpret emotions, interviews with people who have had personal experiences of feeling them and real-life interactions. The findings of this study are important for psychologists, communication professionals, teachers and business people. By learning how others experience emotions differently than we do, we can improve communication, education and counseling services as well as as interactions in the workplace. This research may help us to see the link between cultural background, emotional experience and social behavior, and shows that we should bear in that people from other cultures build up their relationships with one another and perceive the world totally differently.

35

Understanding Meaning-making via Visual and Non-visual Nonverbals in Platonic College Relationships

Levi R. Brewster *WTE* *WUmester*
Mentor: Adebanke Adebayo, Communication Studies

It can be difficult for a person to accurately communicate information at times, without the usage of nonverbals to help them get their message across. Using concepts of non-verbal communication and paralinguistics, this study aims to observe how "visual" and "non-visual" non-verbal communication cues affect meaning-making for college students in platonic relationship. Using Mehrabian's Communication Theory, which suggests that nonverbal elements often carry greater relevance in meaning-making than verbal content alone, this study will use a post-test only experimental design. Findings will have implications for improving communication clarity in social and personal relationships.

36

Stress Type As It Relates to Motivation in College Students

Nell Altena *WTE*
Mentor: Tucker Jones, Psychology

It is widely accepted that motivation in college students is a crucial factor in their performance and learning in higher education (Vallerand et al., 1992). Quantifying motivation into three categories (intrinsic, extrinsic, and amotivation) has allowed researchers to explore deeper into the intentions of college students, as well as estimate outcomes in areas such as curiosity and persistence (Vallerand et al., 1992). Additionally, a student's perception of social support is another vital aspect of their achievement and motivation at school (Song et al., 2015). Understanding that stress influences psychological strain, tension, and emotional exhaustion (Rodell & Judge, 2009), testing how stress relates to the perceived emotional support from friends or family could provide fresh objectives for educators seeking to encourage their students to develop more efficient motivation to learn. As such, the goal of the proposed study is to gain a better understanding of what stress type college students are experiencing from their academic challenges as well as test for any mediation from college students' perceptions of their familial supports or strains. We are currently collecting data and will be able to report on these findings at Apeiron.

37

Who's Responsible: Mental Health Perceptions and Beliefs at Washburn University

Jacob B. Andersen *WTE*
Mentor: Tucker Jones, Psychology

Mental health issues are on the rise in the United States, a trend that shows no signs of slowing. This epidemic is compounded by underutilization of mental health resources by those who would benefit most from them. In past research, demographic identifiers such as sex, race, and one's cultural type have been demonstrated to act as predictors of mental health and help-seeking beliefs. Recent research has been geared toward devising anti-stigma approaches for well-studied demographics and identifying under-researched demographics that may serve as new entry points for combatting stigma and negative mental health beliefs. One demographic that is not yet well understood is instructors on college campuses. The current study aims to contribute to the understanding of the role that instructors play on the mental health of students on a college campus. To accomplish this, we surveyed students and instructors at Washburn University about their mental health beliefs and their beliefs about the climate of Washburn University's mental health resources and its students. We are currently in the process of data collection and will report our findings at Apeiron.

38

The Role of Information Sharing in Shaping Friendships and Communication Dynamics

Ashley J. Brull *WUmester*
Mentor: Adebanke Adebayo, Communication Studies

Social interactions are at the core of human nature. We are naturally social beings, driven to interact and build relationships as part of our survival instincts. Hence, friendships and meaningful conversations shape our experiences and connections with others. This study seeks to explore how

information sharing influences building and maintaining of friendships, using the Communication Privacy Management Theory and Relational Dialectics Theory to analyze these dynamics. Communication Privacy Management Theory examines how individuals manage private information within friendships. Additionally, Relational Dialectics Theory will help analyze the tensions and dynamics that arise in communication, shaping how friendships are developed and maintained. The proposed data collection will use a random sampling survey to ask individuals how information sharing among their friend groups has impacted their relational communication. This research could benefit student organizations, sororities, fraternities, etc., as they navigate finding and building community on campus through friend groups.

39

Parental Communication and Conflict within College Students Romantic Relationships.

Nancy B. Guerrero Cuevas *WTE*
Mentor: Adebanke Adebayo, Communication Studies

Exposure to parental conflict has been shown to be negatively associated with destructive beliefs about conflict (Aloia, 2018). These affect college students even more as they likely get into their first serious romantic relationship. This study will use family systems theory and relational dialectics theory to focus on how parental conflict affects communication patterns, attachment styles, and conflict resolution strategies among college students' romantic relationships. By identifying the dialectical tensions that emerge as college students navigate relationship conflicts against the backdrop of their family-of-origin experiences, this research aims to highlight both the constraints and opportunities for relationship maintenance and dissolution.
Key words: family systems theory, Relational dialectics theory, parental communication, conflict, romantic relationships, college students.

40

The Problem of Pain and the Benefit of Parental Participation in the NICU

Sophie Anne Cather *WTE*
Mentor: Lara Rivera, School of Nursing

Until the late 1980s, the public generally believed that neonates could neither feel nor remember pain. While that belief has since been dispelled, there is still minimal research surrounding pain management in the neonate population, particularly for neonates in the neonate intensive care unit (NICU). It is estimated that each NICU neonate undergoes around ten painful procedures per day (Hatfield et al., 2018). Due to various barriers, NICU parents are often hesitant to visit and interact with their child. The lack of parent participation can lead to underidentified and undertreated pain as well as a difficult transition to home life. This educational project explores the negative effects of unaddressed neonatal pain, pharmacologic and non-pharmacologic pain reduction methods, and the mutual benefits of parent involvement in daily cares.

41

Team Bravo's Analysis of Kansas Department of Transportation Traffic Sensor Data

Rylie Rumsey, Carson Haire, and Logan Bartlett
Mentor: Pamela Schmidt, School of Business

Team Bravo's project with the Kansas Department of Transportation (KDOT) focuses on classifying permanent traffic sensors based on traffic patterns. By analyzing vehicle counts over time, we aim to identify distinct sensor categories that reflect road usage trends. After cleansing our data, conducting exploratory analysis, and utilizing machine learning techniques like K-Means Clustering and Random Forest, we hope to develop a classification system to assist KDOT in categorizing their permanent sensors and better manage and monitor Kansas roadways. Our analysis examines key traffic metrics, including daily and seasonal fluctuations in vehicle counts and variations in traffic patterns throughout the day. Through clustering and predictive modeling, we provide insights that support infrastructure planning, resource allocation, and policy-making. This presentation will highlight our methodology, classification approach, and key findings, demonstrating how data-driven strategies can optimize transportation planning and improve roadway efficiency across Kansas.

42

KDOT (Kansas Dept. of Transportation) and an Investigation of Kansas Traffic, Part A

Sujane Singh Maharjan, Tate A. Schoffelman, and Shane Mullen
Mentor: Pamela Schmidt, School of Business

This project, conducted as part of the Data Analysis Practicum course, involves collaboration with the Kansas Department of Transportation (KDOT) to analyze traffic data and develop insights into roadway usage patterns. The focus is on understanding temporal traffic trends using data collected from Continuous Count Stations (CCSs) and short-term traffic volume counts. The objectives of this study include identifying peak traffic hours, tracking volume trends on specific roadway sections, and applying factor group assignments to improve traffic volume estimates. By clustering roads with similar traffic patterns, we anticipate a better accuracy in the estimation of annual average daily traffic (AADT). The research also seeks to develop strategies for locations where portable counters are impractical. Through this analysis, we will provide insightful information to KDOT for traffic forecasting, road planning, and long-term transportation planning. Our findings will enhance traffic movement, lane closure regulations, and efficiency in the transportation systems in Kansas.

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KDOT (Kansas Dept. of Transportation) Kansas Traffic

Makayla Coffey, Wesley Ekstrand, and Urshula Manandhar
Mentor: Pamela Schmidt, School of Business

Traffic counters play a vital role in the Kansas Department of Transportation (KDOT) efforts to monitor and manage roadway usage across the state. This project explores how KDOT utilizes traffic-counting technology to collect data on vehicle volume and classification which informs infrastructure planning, road maintenance, and traffic safety initiatives. By analyzing traffic data, we aim to assess trends in traffic flow, identify high-traffic areas, and evaluate the effectiveness of data-

driven decision-making in transportation planning. Our research incorporates KDOT reports and public data of key locations where traffic counters are deployed. As part of our analysis, we conducted statistical descriptive analyses on traffic data to identify patterns, trends, and anomalies in vehicle movement across various locations in Kansas. By interpreting these statistical findings, we assess the effectiveness of KDOT's data collection methods and provide insights to potential improvements for traffic management. The findings will highlight the importance of traffic counters in shaping Kansas's transportation policies and offer recommendations for optimizing their use to improve road efficiency and safety.

44

Teenage Screentime and Communication Effects

Cydney Fansher *WTE* *WUmester*
Mentor: Adebanke Adebayo, Communication Studies

The proliferation of digital devices has significantly altered adolescent social interactions and communication skills. Negative behaviors and emotional outbursts in teenagers have become more common as our society uses more technology in and outside of the home. This study seeks to examine the relationship between screen time and teenage social interaction and communication skills through the lens of Media Displacement Theory. Media Displacement Theory posits that time spent on digital devices directly reduces time available for face-to-face interactions, potentially limiting opportunities for developing communications skills required for social interactions. Proposed findings include a) correlation between screen time and teens social interactions, and b) screen time and teens ability or inability to use communication skills to build meaningful social and personal relationships. This implies that having set limitations and boundaries on screen time will benefit teenagers and improve their communication skillset. Recommendations and limitations will be discussed.

45

Where To Go When You Don't Feel Good..... Outside of the Emergency Department

Caitlin Curran *WTE*
Mentor: Michelle Heusi, School of Nursing

An ongoing issue is people using the Emergency Department for non-emergency problems. Many people come in for minor issues. Problems arise because rooms and staffing are overwhelmed with minor issues aren't available for those emergencies. The goal of this project will be to educate people where the best places are to find the care they need and other available resources. There are many studies about insurance, social determinants of health and homelessness and their effects on the use of the ED. In addition to research, questions will be asked to various healthcare resources about what they offer and what they believe are barriers to their use. The plan is to look at research showing who and why the ED is used for primary care or minor issues so much. Through this project education will be provided to the public, especially those using the ED for basic human needs and not for healthcare.

46

Adapting to Remote Work: How Team Communication Dynamics Influence Productivity

Marissa Valencia
Mentor: Adebanke Adebayo, Communication Studies

Since COVID, remote work has become a part of several organizational workforce, inherently changing how teams communicate. While remote work has its benefits, it often introduces challenges such as misunderstandings and less teamwork. This study will use Social Presence Theory (SPT) to examine how different communication tools– ranging from video conferencing to asynchronous email –influence how well remote teams communicate. According to SPT, communication tools with higher social presence capabilities, like video calls with non-verbal elements, are better for team communication than lower-presence alternatives, like emails. Using a mixed-methods approach combining surveys and in-depth interviews with people who work remotely, this study will evaluate how different communication tools either facilitate or impede team communication. The proposed results could help companies choose better communication tools to improve how remote teams work together–collaboration, productivity and interpretations.

47

Health Literacy, Risk Perception, and Beliefs about Medications

Kian K. Beemer *WTE*
Mentor: Angela Duncan, Psychology

With the number of chronic illnesses in America steadily rising (and is expected to continue rising), it is more important than ever to deeply understand barriers to effective treatment. Medication beliefs alone can account for roughly 20% of nonadherence to chronic drug therapy. Inadequate health literacy has been associated with higher mortality rates, after controlling for cognitive function, physical functioning, and health lifestyle. We sought to investigate how risk perception and health literacy levels relate to medication beliefs. Our study included students from Washburn University psychology courses. Participants were asked about experiences with Generalized Anxiety Disorder (GAD), health literacy, beliefs about medications, and risk perception. They also self-reported openness to complementary and integrative treatments. We hypothesized there would be a positive correlation between the level of risk perception and negative beliefs about medications. Our hypothesis regarding levels of health literacy and beliefs about medications was exploratory; we were open to whatever the findings presented.

48

Student Attitudes of Simulation-Based Lab Experiments in Introductory Physics Classes

Lauren Frank
Mentor: Brian Thomas, Physics & Astronomy

Computer simulations are increasingly used in introductory physics courses to help students explore abstract concepts through interactive and manipulable environments. This research project investigates undergraduate students' attitudes towards learning physics concepts, specifically image formation by lenses, interference, and diffraction, through simulation-based labs compared to traditional hands-on experiments. Semi-structured interviews were conducted with students enrolled

in a second-semester, algebra-based physics course on electromagnetism and optics. Interview data were transcribed and coded using emergent theme analysis to identify recurring responses. Findings suggest that students' perceptions of simulation-based experiments are influenced not only by technical design and implementation but also by their physics identity, including their interest, recognition, performance, and competence in the subject. The study led to the refinement of lab instruction protocols and the development of targeted pre- and post-instruction surveys to further assess student engagement. These insights contribute to a broader understanding of how simulation-based labs shape student learning and identity in physics education.

49

From Playgrounds to Campuses: The Impact of Childhood and College Sports on Mental Health

Shannon M. Barta *WTE*
Mentor: Julie Boydston, Psychology

Sports are a prevalent topic in the US during childhood and college years. Mental health is directly affected by physical exercise, but sports include many other factors, such as team building, meeting and socializing with peers, listening to directions, and developing self-esteem and self-identity. Many studies focus on the relationship between sports participation and mental health in childhood, but fewer investigate this relationship in college students. Current literature suggests many positive associations with sports in childhood, including emotional, social, and psychological well-being (Doré et al., 2024). However, there may be a difference regarding the type of sport, such as individual vs. team-based or participation vs. performance participation (Doré et al., 2024; Hoffman et al., 2022; Wang et al., 2017). Studies on this relationship between mental health and sports in college students find differing results. While physical exercise is still crucial, the intensity and attitude towards the sport appear to contribute to mental health in student-athletes (Garinger et al., 2018; Karagiorgakis and Blaker, 2021; Snedden et al., 2019). Overall, children appear to mentally benefit from playing sports, with some exceptions, but more research is needed to investigate this relationship in college students.

50

Tiny Doses, Big Impact: Navigating Safe Pediatric Medication Practices

Eden Jade Min White *WTE* *WUmester*
Mentor: Erica Hill, School of Nursing

Accurate pediatric medication administration is a complex aspect of nursing care. Children are especially vulnerable to medication errors due to their smaller size, developing physiology, and the use of weight-based dosing calculations. This project addresses the challenges nurses and caregivers face in ensuring safe and effective pediatric medication delivery. Through a comprehensive literature review and clinical observations, key factors contributing to medication errors, such as calculation mistakes, taste, and caregiver miscommunication, are explored. The project applies Anne Casey's framework, emphasizing collaboration between nurses, families, and children to improve medication adherence and outcomes. Practical strategies for reducing medication errors are highlighted, including improved caregiver education, the use of standardized protocols, and offering creative approaches to enhance medication compliance in children. The goal of my project is to provide nursing students with evidence-based skills and knowledge to promote safer pediatric medication

practices, ultimately improving patient outcomes and supporting caregivers in providing accurate at home care.

51

Renal Amyloidosis

Kassidy Robertson *WTE*
Mentor: Crystal Stevens, School of Nursing

The purpose of this honors project is to create an educational tool designed to increase awareness and knowledge of renal amyloidosis among healthcare professionals, particularly those in nursing school. This educational project aims to address the gap in knowledge surrounding renal amyloidosis, a rare condition that is often misdiagnosed due to its nonspecific symptoms, by providing nursing students with targeted education on pathophysiology, diagnostic methods, and treatment options for renal amyloidosis. This study hopes to improve early detection and treatment outcomes for patients. The findings will contribute to the development of more effective educational programs for soon-to-be nurses and guide future efforts to improve clinical practice and patient care in the realm of rare renal diseases.

52

Understanding How Communication Practices Affect Gender Stereotypes with Women Trying to Attain Leadership Roles

Kate H. Coulter *WTE*
Mentor: Adebanke Adebayo, Communication Studies

"In senior executive roles, women earn an average of 70% of what men earn in similar positions." (IMD, 2025). Even though there has been significant progress in gender equality and societal expectations, stereotypes continue to shape and limit women's opportunities to get leadership roles. The continuous underrepresentation of women in leadership positions across the board shows that traditional gender roles and communicative expectations still play a significant role in shaping futures and opportunities. By using Social Role Theory and Muted Group Theory, this study will explore how communicative practices and gender stereotypes impacts how women achieve leadership roles.

53

Kangaroo Care in the NICU- Enhancing Neonatal Outcomes

Cheyenne Brooke Mitchell *WTE*
Mentor: Lara Rivera, School of Nursing

Preterm infants encounter numerous health and developmental concerns due to their immature development. Kangaroo Care (KC) offers numerous health benefits to the neonatal infant, specifically, improved physiological and developmental outcomes with enhanced bonding between the infant and caregiver. This research paper explores the benefits of kangaroo care for neonatal infants and the barriers associated with its implementation in the Neonatal Intensive Care Units (NICU). By discussing the benefits, this paper attempts to provide an informed understanding of the role of kangaroo care and its impact on long-term effects on infants. This review analyzes the implications for practice guided by the attachment theory while incorporating evidence based

research to guide its integration into standardization of care within the NICU. This paper examines the physiological benefits, developmental benefits, breastfeeding benefits, and the associated stress reduction for newborns. The neonatal period is a critical time for development, and the implementation of KC can have a profound impact on the health of neonatal infants.

54

Implementing Support Can Guide Students to Better Outcomes and Emotional Well-Being

Madison Lynn Whitham *WTE*
Mentor: Julie Boydston, Psychology

There are many different strategies that can be used when dealing with and overall helping students. This can be school wide implementation or individual student based. Not every counseling skill will be beneficial to each individual student either. Counseling comes in all different forms including academically and mental health. Figuring out how academics and mental health can go hand in hand is key. The importance of this does not just start in high school or college. When students are adolescents, they are the most moldable so starting young is crucial as well. With this, a hefty number of students do not have the support system they need at home. Being the one supporting voice in a crowd of others can make all the difference. Research shows that students are highly aware of situations and tensions going on around them. Though this leaves out being aware necessarily of what is going on with themselves. Students need that opportunity to explore who they are and having someone that is there to support and push them along. It can be found that sometimes not being a voice but instead being open ears can be what is needed most to guide students further.

55

Synthesis of Porphyrins with β-azo Linkage to Other Conjugated Systems

Elizabeth W. Shanafelt
Mentor: Sam Leung, Chemistry

In photodynamic therapy (PDT) for cancer treatments, porphyrins are often used as photosensitizers. These photosensitizers, upon activation from light, transfer energy into oxygen present in body tissue leading to the generation of reactive oxygen species. These species then interact with various biological substrates within the target tissue; the resulting oxidative damage can subsequently effect cancer cell death. Photosensitizers are most effective at wavelengths longer than 620 nm. This project involves the synthesis of porphyrins with a β-azo linkage to another conjugated system in the hope of increasing the absorption wavelength of the porphyrin to greater than 620 nm. To achieve this, the porphyrin must be constructed via the combination of two dipyrromethane molecules. The current goal is to successfully attach an azo group to the beta position of one of these dipyrromethanes. Thus far, all attempts to attach the azo group to the already synthesized dipyrromethane have not been fully successful. We are now attempting to attach the azo group to the various precursors of the dipyrromethane molecule so as to subsequently synthesize the dipyrromethane with the azo group already attached.

56

Bacillus, Bacteriophage, and Biofilms

Olivia Pearl Wedman *WTE*
Mentor: Andrew Herbig, Biology

Bacteriophages (phages) are viruses that exclusively infect bacteria and can significantly impact bacterial populations and their ecosystems. Adastra, a phage that infects the bacterium *Bacillus subtilis*, was previously isolated and characterized at Washburn University. Our current study aims to further explore the biology of this phage by examining the pH tolerance of Adastra, its host range infecting other subtilis strains and Bacillus species, and the phage's ability to remove material from established *B. subtilis* biofilms. Adastra is most stable at a pH range of 6-8. The phage host range is narrow, as Adastra selectively infects *B. subtilis* strains related to W168. We have replicated published experimental conditions to grow *B. subtilis* biofilms in modified LB medium containing glycerol and manganese. These lab-grown biofilms will allow investigations into the ability of Adastra to break down biofilm structure.

57

Breath of Life; A Deep Dive into Bryopsis Plumosa

Jason Scott Lutz *WTE* *WUmester*
Mentors: Jason Emry, Biology; Takrima Sadikot, Biology

Algae is the primary producer for atmospheric molecular oxygen saturation, and has many applications in biotechnology for products produced during photosynthesis. The organism is theoretically the ideal model for oxygen production in limited environments such as space travel vessels containing humans. The goal of this project is to identify the species of marine algae selected and determine oxygen production capacity. The process of identification is through genetic analysis in which a specific gene of the presumptive species identification is verified by DNA extract, PCR replication, and sequencing. The process of determining oxygen production involves growing the organism in controlled environments and taking measurements of molecular oxygen saturation, then analyzing the results for desired information.

58

Promulgating Populism: Fantasy-Building and Modern Political Rhetoric

Cade A. Blenden *WTE* *WUmester*
Mentor: Carson Kay, Communication Studies

Recently, populist rhetoric has seemed to have taken a dominant position in the United States' political consciousness. Following the election of Donald Trump, his defeat by Joseph Biden, and his following and nearly unprecedented re-election, a national political focus on issues that chiefly benefit 'the people' has come into the fore. This paper will evaluate this recent comeuppance, considered against the long and similar history that preceded it. In doing so, it will utilize symbolic convergence theory to analyze timely political communication artifacts in hopes to determine how a shift toward people-centric, or populist, rhetoric has taken hold, and where this shift comes from, considering if this rhetoric is shaped from the 'top-down' or not.

59

The Role of Communication Strategies and Patterns in Influencing Employee Engagement and Team Performance in Organizations

Alhumaidi Alhathal *WUmester*
Mentor: Adebanke Adebayo, Communication Studies

Effective communication is important in fostering employee engagement and improving the overall organizations performance. However, many organizations struggle with effective communication, often leading to reduced productivity and collaboration. This research seeks to examine how various patterns and strategies of communication affect employee engagement and overall team performance This research is based on Social Exchange Theory (SET), which says that workplace interactions are give-and-take relationships. Good communication helps build trust, commitment, and stronger engagement among employees (Yan et al., 2016). The study will also use Media Richness Theory (MRT) to look at how different communication methods affect how fast and well teams respond (Ishii et al., 2019). The study will obtain data through surveys and interviews from employees and managers from different organizations. The findings will be of benefit to organizational leaders, human resource personnel and communication specialists by providing insight on strategies to enhance workplace communication and improve overall employee performance.

60

Synthesis of Variable-Colored Graphene-Based Quantum Dots

Miranda Dawn McCammon
Mentor: Hoang Nguyen, Chemistry

The primary goal of this research project is to investigate the fluorescence capability of our synthesized graphene-based quantum dots (GQDs) to emit different colors in the visible spectrum. The synthesis of GQDs involves multiple steps, beginning with the nitration of solid pyrene using a mixture of nitric acid and sulfuric acid, followed by an ultrasonic bath and a subsequent reaction with hydrazine hydrate, which is then heated in an autoclave. Previously, a sample of blue-emitting GQDs has been successfully synthesized. The blue color fluorescence corresponds to a quantum dot size of 5 nm in diameter. However, we hypothesize that our previous sample likely contained GQDs of various other sizes, with the 5-nm dots being present in the highest concentrations. We are currently working on synthesizing a new batch of GQDs. Once a mixture of quantum dots is obtained, the sample will be dialyzed against deionized water to separate the synthesized GQDs into different size groups. Through this process, we hope to isolate GQDs that emit different colors of the visible spectrum, such as orange, yellow, or green, thereby demonstrating the ability to synthesize GQDs of variable sizes and colored fluorescence.

61

How Pigment Is Affected by Different Light Environments

Taryn Elyse Emery *WTE*
Mentor: Jason Emry, Biology

Plants only use specific wavelengths of light during photosynthesis, these wavelengths being red, blue and violet. White light, however, contains these wavelengths in addition to other wavelengths that the plant cannot use which in turn places the plant under stress. Why are these pigments

important and how do they affect us as humans? Chlorophyll content in plants helps us to determine how effective the plant is at photosynthesizing and producing its own energy source. What I wanted to discover is whether different pigments in the plant are affected by the type of light directed towards them. I wanted to find how different pigments present in plants grown under different wavelengths of light. I predicted the plants grown under white light will produce more pigments than the plants under purple light. We studied lettuce (*Lactuca sativa*), spinach (*Spinacia oleracea*), and mustard (*Brassica rapa*). We saw a variation in the chlorophyll b content of mustards where the plants under white light had significantly more pigment than purple light. Further study needs to be done on the anthocyanin content to find what factors affect the levels of this pigment in the plant. Information on this pigment can be beneficial to us because of its antioxidant properties. In the future, we plan to work with just the mustard species as this is the only one that showed to have any significant pigment change with the light environments.

62

A Closer Look: How Communication Patterns of Silence and Non-Disclosure Impact Conflict Resolution in Romantic Relationships

Grace Cheyann Gallagher *WUmester*
Mentor: Adebanke Adebayo, Communication Studies

While silence has long been recognized as one of communication's most powerful tools, it's the impact of silence on conflict resolution and emotional well-being in romantic relationships that is surprisingly underexplored. This study will be investigating how silence impacts both partners during conflict, using Relational Dialectics Theory (RDT) as its theoretical foundation. Baxter and Montgomery's theory focuses on the ongoing tensions and contradictions in personal relationships, which will be useful in understanding how silence functions within romantic relationships. The proposed findings from the study will offer practical insights that empowers couples to navigate their relationships more effectively by understanding when and how silence operates as either a constructive or destructive force in their communication patterns. Hence, couples will be able to navigate their relational conflicts more effectively. Proposed practical applications and implications will be discussed.

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Managing Postprandial Glucose Spike and its Effects on Cardiovascular Health

Divita Gadtaula *WTE*
Mentor: Crystal Stevens, School of Nursing

The purpose of this project is to provide information regarding the importance of diet management in diabetic patient to reduce the risk for CVD. This will help raise awareness among health care workers to help at risk patients. The aim is to provide accurate information regarding the link between nutrition and health of diabetic patients. The project will help deliver knowledge regarding manipulation glucose spikes with the help of nutrition to reduce the adverse effects of diabetes. Findings of this project will help nursing students specifically, to educate their diabetic patients the importance of diet manipulation to tame the adversities of the disease process.

64

Comparison of Voluntary Hyperventilation Protocols

Gustavo Cadan
Mentors: Paul Wagner, Biology; Tracy Wagner, Biology

Hyperventilation is the process of breathing more rapidly or deeply than needed to exchange gases between your lungs and the environment. Ultimately, it leads to lower than desired carbon dioxide levels in the body and increased oxygen levels. Typically, the body will regulate ventilation to maintain both gases in a desired range, but because breathing is a voluntary activity, it is possible to purposely hyperventilate. Athletes may choose to do this before participating in an intense, short-term activity (sprint) or where breath-holding may occur (swimming). Theoretically this gives the athlete extra time before carbon dioxide levels rise to the point of inhibiting an athlete's performance. Various groups have studied hyperventilation, concluding that it has no effect, or minor effects on the outcomes. However, when reviewing the methods, it became clear that there is no standard hyperventilation protocol. Some groups have used a method where subjects take very deep breaths at a low rate while others have used a rapid rate which limits the depth of breath possible. The purpose of this study is to look at the various protocols and determine if these differences might account for the varied results of studies.

65

Study of Supernova Effects on Climate Change Through Developed Synthetic Atmospheric Ozone Profiles

Alessandro Di Gregorio *WTE*
Mentor: Brian Thomas, Physics & Astronomy

Supernova explosions produce radiation that causes changes in the ozone concentration and distribution in the atmosphere. So far, it has been found that the ozone presence perturbed by cosmic ray radiation has been lowered. Nonetheless, the gas is spread out more, and the main concentrations are at altitudes below the typical value we see today in our atmosphere. Overall, it appears more concentrated at the equator. Ozone plays a role in global climate, and a recent study using an intermediate-complexity global climate model (PlaSim) found a slight increase in global temperature for a specific supernova case.

To further investigate, we have developed a function that allows us to represent the ozone distribution changes over time and the identification of vertical and latitudinal profiles dependent on the O3 concentration. We applied the equation to create profiles for a supernova case to study overall changes in climate. Our work will allow us to understand better how ozone changes caused by supernova radiation affect climate. The analysis performed shows an increase in temperature due to the change in ozone concentration.

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How NIL is Reshaping College Recruiting: A Policy Analysis

Jordan Vincent
Mentor: Adebanke Adebayo, Communication Studies

The introduction of Name, Image, and Likeness (NIL) policies has significantly altered the college recruiting landscape by shifting athlete decision-making toward financial incentives rather than academics and athletics. Wealthier programs and NIL collectives have leveraged these deals to secure top recruits, leading to competitive imbalances (Anaba, 2023). This study applies Social Exchange Theory to analyze how athletes weigh financial benefits against other factors when choosing a school. Data will be collected through an analysis of NIL contracts, recruiting trends, and interviews with college athletes and coaches. Findings will provide insight into how NIL impacts recruiting and inform policy recommendations to ensure a more fair and transparent system (Zion, 2023).

67

My College Basketball Coaching Internship

Jordan Vincent
Mentor: James Schnoebelen, Communication Studies

This presentation shares my experience as a student intern with a college basketball program. During my internship, I worked closely with the coaching staff to learn about practice planning, film study, scouting, and player development. I helped organize practices, assisted with drills, and broke down film to prepare scouting reports. I also got the chance to lead parts of team workouts and meetings. One of the biggest lessons I learned was how important communication, preparation, and leadership are in coaching. I saw how coaches build relationships with players and how much time goes into getting ready for games. This experience helped me grow in confidence and gave me a better understanding of what it takes to coach at the college level. I plan to use what I learned as I continue working toward a career in coaching. My internship gave me a great start and showed me how much I still want to learn.

68

Worth the Dialogue

Olivia Fieger
Mentor: James Schnoebelen, Communication Studies

Over the course of the 2025 spring semester, I have had the opportunity to complete my internship at the Capper Foundation and, supplementally, the various locations of the Dialogue Coffee Houses. The foundation provides services to children and adults with various intellectual and developmental disabilities, while the Dialogue business employs cashiers and baristas with various needs and abilities. This experience has broadened my knowledge of the professional environment I wish to work in, as well as provided me with the opportunity to grow as an individual and foster relationships with individuals with special needs through immersion.

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Navigating Social Media Effects on Adolescents

Grace Umbarger
Mentor: Linzi Gibson, Psychology

Social media has become a primary source of entertainment and communication for adolescents, offering a platform for connection and self-expression. However, it also presents challenges, contributing to issues such as anxiety, self-esteem problems, and cyberbullying. A substantial body of research has delved into the complex relationship between social media usage and adolescent development, revealing both positive and negative outcomes. The current studies emphasize the urgent need for balanced approaches to social media use among young people. They highlight the critical role of parental guidance and educational interventions in fostering healthy online habits, ensuring that adolescents can navigate digital spaces safely and positively. Moreover, the research underscores the significance of promoting digital literacy, encouraging critical thinking about online content, and developing resilience against negative online experiences. Overall, these studies provide valuable insights into the effects of social media on adolescents, offering guidance for parents, educators, and policymakers in creating strategies that promote positive engagement and well-being in digital environments.

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Characterizing Laser Beams for Construction of Optical Cavities

Destiny Azemafac Ashunganya
Mentor: Hoang Nguyen, Chemistry

This project aims to create an optical cavity system that will allow orders of magnitude enhancement of optical signals. We are working toward constructing a new micro Fabry-Perot cavity system with two high-reflectivity mirrors situated micrometers apart to concentrate the laser optical power and enhance the optical signal resulting from the interactions between light and our materials of interest. We are investigating and integrating the different laser sources that will be used for the cavity system, including the visible, infrared, and ultraviolet lasers. We determine the beams' sizes and divergence by measuring their power at various distances away from the laser source while cutting the laser beams with a razor blade. Such information will allow us to effectively focus these laser beams into our microcavity to maximize the optical interaction between these lights and our nanoparticle sample. The resulting optical signal will provide valuable information on the nanoparticles' size, shape, and other physical properties. Ultimately, this new cavity system will enable further studies of nanoparticles inside a cellular environment at very low concentrations.

Reception

Mediterranean Menu

Spiced Labneh

Roasted Red Pepper Hummus

Garlic Hummus

Fried Pita Chips

Mini Nan

Fried Calamari with Marinara Dip

Gyro Meat server With Pita Bread, pickled onions and Diced Tomatoes

Tzatziki

Couscous Salad with Sun Dried Tomato and Feta

Mediterranean Chicken

Basmati Rice with diced eggplant Basil and Lemon

Tiramisu

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(name, page number)

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