

SAC
2019



Tuesday, April 16, 2019

MINNESOTA STATE UNIVERSITY MOORHEAD PRESENTS

21st Annual

ANDREW B. CONTEH

Student Academic Conference

*Student-Centered Education through Mentoring
Student Research and Creative Activities*



Since 1999



MINNESOTA STATE UNIVERSITY
MOORHEAD.

A member of the Minnesota State system



Greetings:

At Minnesota State University Moorhead, our purpose is to transform the world by transforming lives. Nowhere is that purpose more evident than at the annual Student Academic Conference. Now in its 21st year, the conference embodies the qualities that make MSUM a truly special and transformative place: our legacy as a teaching university where the faculty-student relationship is at the heart of the educational experience; our commitment to providing students with opportunities to explore and discover their passions; and the transformation that occurs when students discover their reason for being and feel prepared to pursue their purpose.

The projects being presented today represent countless hours of planning, problem solving, experimentation, investigation, innovation, and preparation. Behind every project there is not only a motivated student but also a dedicated faculty mentor. It is the mentoring relationship—whether in the laboratory, the field, the theatre, the studio, the computer lab, or the classroom—that makes these applied learning opportunities truly transformative.

Congratulations to the students who are presenting at the 2019 conference and the faculty mentors who worked side-by-side with those students to make their presentations possible. And thank you for exemplifying the spirit of exploration and discovery that enriches us all.

Sincerely,

Anne Blackhurst
President

Conference Participants and Attendees:

Congratulations to everyone participating in the Dr. Andrew Conteh Student Academic Conference. This event is one of the highlights of the academic year for the MSUM community. The projects being presented today are evidence of student-faculty engagement and MSUM's commitment to providing our students with opportunities for collaboration, experiential learning, and active participation in the learning process.

As I read the titles of the presentations for this year's conference, I am overwhelmed by the more than 300 scholarly works that our students and faculty have prepared during this academic year. The wide variety of topics is also very impressive—anxiety disorders, sleep deprivation, autism spectrum disorder, diversity and inclusion, healthcare, fraud, and immigration—this is only a small sample of the exciting and timely topics being presented at this year's conference. Your works contribute to and are examples of how MSUM addresses its strategic anchors: Student Achievement, Diversity and Inclusion, and Community Development.

Students, I applaud you on your preparation and hard work and I look forward with enthusiasm to listening to your presentations. Your work reflects critical thinking, problem solving, exploration and discovery necessary for engaged learning. Faculty, I thank you for your mentorship and collaboration with your students; without your contributions this conference would not exist.

The Dr. Andrew Conteh Student Academic Conference is truly a transformative experience for every participant, including those of us who attend and have the unique privilege of being able to witness our promise to transform lives through exceptional student-faculty engagement.

Again, congratulations and I wish you well.

Marsha Weber

Marsha Weber
Interim Vice President of Academic Affairs





21st Annual **ANDREW B. CONTEH** **Student Academic Conference**

Tuesday, April 16, 2019

8:30-9:30 a.m.	Featured Graduate Lecturers: Ashley Doll Christopher Dufault
9:00 a.m.	Registration and Information Table
9:40 a.m.	Presentation Session 1 and Poster Session 1
11:10 a.m.	Luncheon (Welcome and Introductions)
11:50 a.m.	Keynote Speaker—Eric Eager, 2008 Mathematics alumni
12:40 p.m.	Presentation Session 2 and Poster Session 2
2:00 p.m.	Break
2:10 p.m.	Presentation Session 3 and Poster Session 3
Out of Africa Hansen Theatre 7:30 p.m. <i>Music Inspired by the Motherland</i>	



Eric Eager

2008 Mathematics

Football. America's favorite sport and one of the most anticipated seasons of the year. Despite all the hype, we often forget about the analytics and strategy that happen behind the scenes.

MSUM alumnus **Eric Eager '08** (mathematics) played football at MSUM from 2004-07 and was involved in Students Today, Leaders Forever. After graduating, Eager earned a Ph.D. in mathematics from the University of Nebraska in 2012 and worked as a professor of mathematics at the University of Wisconsin-La Crosse.

"During my fourth year as a professor, I was consulting with a few companies and stumbled upon Pro Football Focus (PFF)," Eager said. "They let me write articles about football and paid me to watch college and NFL games on the weekends, which I thought was a dream."

The CEO and founder of PFF noticed Eager's work and convinced him to join PFF as a consultant and eventually a senior data scientist in July 2018. His responsibilities include research, development, and content.

"The research part is taking our NFL and college football data to ask questions about the game of football," Eager said. "During the development phase, I take the math skills I learned at MSUM to build machine learning and simulation models to help football teams win more games. Development also assists media partners to deliver better and more relevant content. Content is writing articles exploring ideas in football using data, as well as hosting the weekly podcast, PFF Forecast."

Eager said his key to success was recognizing the difference between contentment and complacency and humbly accepting that what is good enough today might be obsolete tomorrow. He also credits his four years at MSUM for getting him where he is today.

"The most important thing college can give you is the ability to think and learn for yourself, and MSUM prepared me immeasurably. My MSUM experience instilled the necessary intellectual tenacity to evolve and thrive professionally in this ever-changing world."



Ashley Doll

Major: School Psychology

Year in School: Graduate Student

Hometown: Mandan, North Dakota

Gaze Patterns of Social and Nonsocial Stimuli: A Possible Early Marker for Autism Spectrum Disorder



> By Karissa LaMont

One in 59 children is diagnosed with Autism Spectrum Disorder (ASD) in the United States. Most children are diagnosed after age four, but an earlier diagnosis and intervention creates the best opportunity to support healthy development and can reduce the cost of lifelong care by two-thirds.

Ashley Doll looked into a possibility for diagnosing ASD as young as six months through tracking gaze pattern differences between typically developing children and those with ASD.

“We used an infrared laser eye tracker to follow where the kids were looking,” Doll said. “We tested kids from birth to age five years eight months, and found the kids with ASD bounced around on the screen less by looking at certain parts of the screen more often and looked at videos for less amount of time than typically developing kids.”

This early intervention screening process for children with ASD can help teach nonverbal communication, empathy, understanding others, and reading facial expressions. Since these skills do not come naturally for kids with ASD, early intervention increases their chance of healthy development.

“It was eye-opening to me that no one can really be an expert on ASD,” Doll said. “There’s so much out there to learn because it’s such a different disorder to everybody. No person with autism is the same as another person with autism.”

“Students have so many opportunities on campus, such as working in the lab and conducting research with professors.”

– Ashley Doll

Doll is also thankful for her experience at MSUM and the opportunity to share what she has learned at the Student Academic Conference.

“You can really do a lot of things on this campus,” Doll said. “I did my undergrad here and am now doing the grad program. Students have so many opportunities on campus, such as working in the lab and conducting research with professors. I am excited to share that experience with the undergrad students.”

Ashley is a selected graduate lecturer by the MSUM Graduate Student Council.

Christopher Dufault

Major: Master of Business Administration

Year in School: Graduate Student

Hometown: Charlton, Massachusetts

Internet of Things and Blockchain Technology: A Comparison of Supply Chains

“Whether it spawns into a direction of improving their life immediately, inspires them to do additional research, or even influences their career path – that makes me a catalyst in something bigger than myself.”

– Christopher Dufault



> By Karissa LaMont

Technology is changing the way we live. With information, schedules, restaurants and stores at the touch of our fingertips, our lives are becoming dependent on what technology offers. With such rapid technological advancement also comes downfalls such as hacking information. What if there was a way to prevent this? Christopher Dufault says the answer lies in blockchain, an encryption technology that is essentially hack proof.

“Blockchain is accessible to anyone who wants access to it,” Dufault said. “It allows for complete transparency in some people's lives and prevents a lot of the undercurrent activities and negative things from happening.”

A large part of Dufault's research is theoretical as opposed to practical because it is cutting-edge technology. When it comes to this kind of technology, not all companies are excited to share and potentially give competitors an advantage to improve on it.

“I found companies that are implementing these technologies are not sharing their findings, which is ironic because the whole point of blockchain is to allow for transparency,” Dufault said. “Information is being kept close to the vest by the people who are producing it, so if a company finds a way of

implementing this, or some combination of entities agree to make use of this as an international standard, someone needs to have their ear to the ground to be aware of this going on.”

Although blockchain has not been used as much in the United States, countries like Australia, Japan and South Korea are implementing strategies to set an international standard of having both transparency and safety in data. Dufault attended an international conference on blockchain technology as part of his research and spoke with four industry experts who let him borrow abstracts, published papers, and information from presentations.

“The biggest takeaway I want people to recognize is that when enough people bring their creativity and interests of blockchain together, it allows for greater potential application. I hope that at least one person in the audience thinks, ‘this gives me an idea.’ Whether it spawns into a direction of improving their life immediately, inspires them to do additional research or even influences their career path – that makes me a catalyst in something bigger than myself.”

Christopher is a selected graduate lecturer by the MSUM Graduate Student Council.



Adam Schutt

Major: Economics

Year in School: Senior

Hometown: Minot, North Dakota

Sanctuary Cities and their Respective Effect on Crime Rates



> By Karissa LaMont

Do sanctuary cities experience more violence and crime than other cities? Adam Schutt used his study to find the answer. A sanctuary city is a city whose local government or city police department does not comply with Immigration and Customs Enforcement (ICE) demands. If ICE asks for immigration records, a sanctuary city will protect illegal immigrants by refusing to hand over names.

Schutt looked at 150 cities in his study with 25 of them being sanctuary cities. He calculated crime rates in each city and compared them to population and other statistics such as income, foreign-born or noncitizens.

“I found that sanctuary cities, on average, do not experience higher violent crime rates,” Schutt said. “Another statistically significant variable was anytime the percent Hispanic population went up in a city, violent crimes decreased.”

Not only did Schutt learn the truth about sanctuary cities, but his research also added value to his thoughts on the matter.

“This study really solidified the idea that we have to be careful what we believe when we’re watching the news. In today’s world, it doesn’t matter if you’re liberal or conservative, Republican or Democrat, or what station you watch. They all

sensationalize things. Just because someone is famous and they’ve been giving the news for years does not mean they’re always telling the truth or portraying evidence without bias.”

Schutt has had the opportunity to present this research at the Eastern Economic Conference in New York and is looking forward to sharing his findings at the MSUM Student Academic Conference.

“Presenting at the Student Academic Conference is important to me because you get real-world practice and gain confidence in yourself by presenting something you’ve worked so hard on.”

– Adam Schutt

“I’m really proud of this research. I had great professors, Dr. Flores and Dr. Hansen in the Economics Department, who helped me a lot with this project. Presenting at the Student Academic Conference is important to me because you get real-world practice and gain confidence in yourself by presenting something you’ve worked so hard on.”

Joanna Blum and Samantha North

Predicting Future Effects on Minnesota Biodiversity



> Joanna Blum
Major:
Ecology & Evolutionary
Biology
Year in School:
Sophomore
Hometown:
Champlin, Minnesota

> Samantha North
Major:
Ecology & Evolutionary
Biology
Year in School:
Sophomore
Hometown:
Fargo, North Dakota

> By Karissa LaMont

Climate change is a divisive topic in the media, politics, and throughout college campuses. Joanna Blum and Samantha North took an in-depth look into how climate change is going to affect flora (plant life) and fauna (animal life) in Minnesota over the next five years and created a proposal showing a process for how the problem can be solved.

“We’re in the middle of the sixth biggest mass extinction in the earth’s history,” Blum said. “As a result, all the studies are saying we’re losing a lot of biodiversity in plants, fungus, bacteria, animals, all of the above.” Blum and North looked at different climate models and studied how temperature and precipitation affect flora and fauna in Minnesota.

“The most promising method we’ve found is using models to produce other models from things we can measure easily,” Blum said. “We can always measure how much precipitation

“If we can get people thinking about this problem outside of our majors and apply what they learn from us into their own lives, it will be really beneficial toward making a difference.”

– Samantha North

is happening, which is needed by flora. If there is not as much precipitation, flora won’t do as well, which in turn will affect fauna because they eat the plants. Our model focuses on temperature to precipitation and is linked to a model of precipitation to flora, and then to flora/fauna.”

Blum and North have taken the large-scale global phenomenon and broken it down to see how it will affect Minnesota in areas like the Boundaries Waters or lake houses. Their research has also impacted their thoughts on climate change.

“This problem isn’t just an evolutionary and ecology problem,” Blum said. “We need to figure out how it’s going to affect governments and everyday people. And to do that, we need to know the economics and politics of how we can fix this problem. Learning from our history and making different groups aware so we can work together.”

“A lot of people come to the Student Academic Conference, and you never know who’s going to be in that room listening to your presentation,” North said. “If we can get people thinking about this problem outside of our majors and apply what they learn from us into their own lives, it will be really beneficial toward making a difference.”



ANTHROPOLOGY AND EARTH SCIENCE

Meshkwaki Anemoaki: The Cultural Roles of Canines among Meskwaki Culture

Emma Gooding

Advisor: Erik Gooding

Classification and Calculation of Vegetation Indices from UAS Imagery for the Regional Science Center

Asami Minei, Yoko Kosugi

Advisor: David Kramar

Mental Health and Culture in Zimbabwe

Rachel Boeckman

Advisor: Bruce Roberts

Sedimentological Interpretations of Landscape Development in the Buffalo River Valley: MSUM Regional Science Center in West-Central Minnesota

David Ahumada, Dominic Mugavero, Chris Perna, Karissa Beierle

Advisor: Karl Leonard

Sauk Place Names in Minnesota

Emma Graves

Advisor: Erik Gooding

Anthropology and Biology and Their Complimentary Roles in Understanding Humanity

Liberty Weiss, Kassandra Sofferman, Sylvia Sandstrom, Melissa Foley

Advisor: Erik Gooding

The Effect of Chlorine on the Chemical Activity of Nickel in Silica Melt

Aakash B C, Tripti Sharma

Advisor: Russell Colson

Something Different on the Buffalo River

DaKanya Roach

Advisor: George Holley

Using GIS and Machine-Learning to Recognize Subtle Landscape Features Associated with Glacial Lake Agassiz

Yoko Kosugi

Advisors: Karl Leonard, David Kramar

The Revival of Confucianism in Modern China

Eduardo Gonzalez

Advisor: Amanda Butler

BIOSCIENCES

Effect of Sleep Deprivation and Melatonin on Cytokine Expression in Zebrafish

Shakiba Hajipouri, Alexis Cory, Elaina Thompson, Alison Barkhymer

Advisor: Sumali Pandey

Effects of Aspergillus fumigatus on Lungs of Offspring in C57 Mice When the Pregnant Mother was Exposed Intranasally to A. Fumigatus During Pregnancy

Andrea Schaefer, Hussien Bare

Advisor: Sumali Pandey

Murine Species as a Possible Model for Lung Mycobiome Studies

Whitney Welder, Jacob Tesch

Advisor: Sumali Pandey

Effects of Deoxynivalenol on Immunomodulation and DNA methylation

Jesse Nelson, Whitney Shegrud

Advisor: Sumali Pandey

Risk Factors for Type 2 Diabetes Mellitus with Class Data

Kayla Mehrer, Breanna Huynh, Chantell Mindt, Clay Miller, Amanuel Atsbha Gebreyohannes

Advisor: Patricia Wisenden

Abstracts for Student Academic Conference: Type 2 Diabetes

Iveta Harner, Rachel Martinson, Benjamin Giese, Jennicca Leier

Advisor: Patricia Wisenden

The Effects of Ethnicity and the Rates of Type 2 Diabetes

Alexis Solo, Madisen Strand, Ngim Chhamji Sherpa, Logan Spooner

Advisor: Patricia Wisenden

The Risk of Age and Genetics on Type II Diabetes

Rebecca Volkert, Victoria Yanez Rich, Ashley Trustheim, Jacob Tesch

Advisor: Patricia Wisenden

Effects of Body Morphology and Fat Distribution on Type 2 Diabetes

Maryam Adepitan, Hussien Bare, Madeline Erickson, Chimaobi Okakpu, Olatomiwa Ajayi

Advisor: Patricia Wisenden

The Risk of Stress on Type II Diabetes

Rhoda Gwaska, Madison Schatz, Kaylee Schlittenhardt, Haylee Morin

Advisor: Patricia Wisenden

What is the underlying cause of Hypoplastic Left Heart Syndrome?

Whitney Shegrud, Kervens Accilien, Trysten Jensen, Nikolas Newville

Advisor: Adam Stocker

Age Is a Risk Factor for Type 2 Diabetes

Morgan Stoffel, Andrea Schaefer, Nathan Witzel, Chelsey Ranum, Kennedy Rodgers

Advisor: Patricia Wisenden

Type 2 Diabetes and the Physiological effects of stress

Katherine Kimlinger, Christal Harmon-Moe, Katherine Knutson, Sierra Koskela

Advisor: Patricia Wisenden

Type 2 Diabetes Mellitus and Ethnicity

Dana Marley, Christopher Ngo, Kylie Lange, Hannah Meyer

Advisor: Patricia Wisenden

The Effect of Lifestyle Choices on Developing Type II Diabetes

Ethan Gerbig, Bijeta Gurung, Carly Gamrath, Kaylyn Cummings

Advisor: Patricia Wisenden

Body Morphology as a Risk Factor of Type 2 Diabetes

Victoria Arnold, Joely Christianson, Dominic Carr, Dillon Boen, Adam Breske

Advisor: Patricia Wisenden

General Diabetes and Class Data

Andrew Primus, Emily Gallmeier, Helena Malokeh Tiewah, Frank Djarnie, Morgan Parks

Advisor: Patricia Wisenden

Analyzing Effect of Aquaponics vs Conventional Growth Environments on Root Growth

Kervens Accilien

Advisor: Christopher Merkord

Projected Climate Change Effects on Minnesota

Joanna Blum

Advisor: Christopher Merkord

Does access to healthy food correlate with diabetes prevalence?

Matthew Anderson

Advisor: Christopher Merkord

The Pet Trade and Topical Conservation in Costa Rica

Joanna Blum, Samantha North, Nicholas Wilm

Advisors: Christopher Merkord, Brian Wisenden

*Gene Diversity in Common Bottlenose Dolphins (*Tursiops truncatus*) Found in the Gulf of Mexico*

Megan Gates

Advisor: Christopher Merkord

Testing Estrogen and BPA Levels in the Red River

Ashley Trustheim, Garrett Hennen, Morgan Stoffel, Kylie Lange, Jade Schanz, Kelsey Lindgren, Zoe Kienenberger, Nikolas Newville

Advisors: Shawn Garrett, Ellen Brisch, Patricia Wisenden

Endocrine disrupting chemicals (EDCs) in lakes and rivers

Ashley Trustheim, Garrett Hennen, Morgan Stoffel, Kylie Lange, Jade Schanz, Kelsey Lindgren, Zoe Kienenberger, Nikolas Newville

Advisors: Ellen Brisch, Shawn Garrett

Relationship Between Visceral Fat and Blood Glucose Levels

Abby Thorkelson

Advisor: Christopher Merkord

Species Composition and Sex and Age Ratios of Small Mammals Before and During a Prairie Restoration in Clay County, Minnesota

Breanna Huynh, Evan Carlson, Dominic Carr, Dylan Leach

Advisor: Donna Stockrahm

Hotter Temperatures may mean Greener days

Nico Arias

Advisor: Christopher Merkord

Geese Migratory Patterns

Daniel Paulson

Advisor: Christopher Merkord



PRESENTATION LISTINGS

Liver Transplant Method and its Effect on Long-term Creatinine Levels

Trysten Jensen

Advisor: Christopher Merkord

Arboreal Mammals of Costa Rica

Laura Bowen, Kristina Keller, Jordyn Ketcham

Advisors: Christopher Merkord, Brian Wisenden

Correlation in Asthma related Hospitalizations and Poverty in Minnesota Counties

Daniel Deppa

Advisor: Christopher Merkord

Development of a CURE based Cell Block

Whitney Shegrud

Advisor: Sumali Pandey

Exploratory analysis of Phagocytic cell presence in Murine Models

Whitney Shegrud

Advisors: Christopher Merkord, Sumali Pandey

Conservation of Costa Rican Predatory Mammal Habitat

Glory Ames, Joshua Schmiess

Advisor: Christopher Merkord

Emx2 as a Modulator of DNA Methylation in the Cerebrum

Nicholas VanRaden

Advisors: Adam Stocker, Sumali Pandey

Projectile northward migration of flora and fauna in the next century

Elizabeth Erber, Nico Arias

Advisor: Adam Stocker

Antipredator morphological responses of snails to chemical cues in calcium-rich and calcium-poor environments

Julia Imdieke

Advisor: Brian Wisenden

Factors influencing high school truancy in the US

Vanessa Okeibunor

Advisor: Christopher Merkord

From SEA-PHAGES to snowphages: Isolation and Analysis of Bacteriophages Isolated from Snow

Nikolas Newville, Anna Elgersma, Kelsey Leach, Alex MacGregor

Advisors: Sumali Pandey, Michelle Tigges

County Health and the Factors that Contribute

Maxwell Scott

Advisor: Christopher Merkord

Factors that leads to specific rates of diabetes in counties of Minnesota

Jajai Hang

Advisor: Christopher Merkord

Visually-mediated behavior changes due to removal of Emx2 gene in primary visual area

Caitlyn Schaffer, Akira Shastri, Devante Delbrune, Olatomiwa Ajayi, Carly Hansen

Advisor: Adam Stocker

Environmentally-induced hatching and its fitness consequences for zebrafish embryos

Abby Kostiuik, Joanna Blum

Advisor: Brian Wisenden

Predicting Future Effects on Minnesota Biodiversity

Samantha North, Joanna Blum

Advisor: Adam Stocker, Christopher Merkord

The Behavioral Effect of Removing Emx2 from Mice Brains

Jacob Mehlhoff

Advisor: Christopher Merkord

Certain treatments are more helpful than others for type 2 diabetes

India Nordby

Advisor: Christopher Merkord

Vaccine Administration: Yellow Fever

Cassandra Carlson

Advisor: Christopher Merkord

Conservation Values as Observed in Costa Rican Culture

Rachel Rusten, Clara Derby, Brittney Kakac, Nicole Stepan

Advisors: Christopher Merkord, Brian Wisenden

Diurnal Raptor Habitat Use During Migration Season

Rachel Rusten, Brittney Kakac

Advisor: Christopher Merkord

Determining the relationship between grassland landscape characteristics and bird abundance

Iveta Harner, Rachel Rusten

Advisor: Christopher Merkord

Changes in Minnesota NDVI due to variations in precipitation

Elizabeth Erber

Advisor: Christopher Merkord

Factors like body index mass and daily physical activities have a role in one developing diabetes mellitus

Ritu Pandey

Advisor: Christopher Merkord

Analysis of early area patterning regulation by Emx2 utilized by an improved Foxg1-IRES-Cre driving mouse line

Babylon Alrobaei, Malique Delbrune, Neeju Singh

Advisor: Adam Stocker

5 Most Common Turtle Species Globally & the Counties They Are Most Prevalent In

Syreeta Shigematsu

Advisor: Christopher Merkord

Changes in Minnesota Flora and Fauna in Response to Climate Change

Anneliese Johnson, Andie Wood

Advisor: Adam Stocker

A look at Setaria viridis PDRP knock-outs and its effect on PPKD enzyme activity

Ashley Rezachek, Jenna Wegscheid

Advisor: Chris Chastain

The Effect of Heightened Concentrations of Emx2 on DNA Methyltransferases

Jacob Mehlhoff, Charles Wisenden

Advisor: Sumali Pandey, Adam Stocker

UGA Costa Rica Campus

Victoria Heinecke, Morgan Parks, Grace Steiner

Advisor: Christopher Merkord

Small mammal recolonization of a restored prairie in Clay County, Minnesota: possible effects of neighboring habitats

Dominic Carr, Dylan Leach, Breanna Huynh, Evan Carlson

Advisor: Donna Stockrahm

Duration of behavioral and physiological responses to alarm cues in zebrafish: predator vigilance and anxiety in humans

Philip Larson

Advisors: Brian Wisenden, Shawn Garrett

Global Warming and its effects on snow cover

Nicholas Wilm

Advisor: Christopher Merkord

How does race and ethnicity impact teen birth rates ages 15-19?

Marissa Thompson

Advisor: Christopher Merkord

Painted turtle size and rates of recapture

Lahren Sandford, Madison Fladeland

Advisors: Donna Stockrahm, Christopher Merkord

Prescribed burn effects on plant species richness and biomass in a restored tallgrass prairie

Breanna Huynh, Amina Kovacevic, Patrice Delaney, Asami Minei

Advisors: Alison Wallace, David Kramar

Fluctuations in numbers of juvenile western painted turtles (Chrysemys picta bellii) from 2015-2018 based on trapping records in Clay County, Minnesota

Emily Larsen, Nicole Stepan

Advisor: Donna Stockrahm

Tone Deaf: Specificity in Auditory Conditioning of Zebrafish

Savanna Hohenstein, Mark Lueders

Advisor: Brian Wisenden

Money vs. Education

Miranda Kiefer

Advisor: Christopher Merkord

Does trappability of western painted turtles (Chrysemys picta bellii) differ with size class and/or sex in Clay County, Minnesota?

Maxine Torgerson

Advisor: Donna Stockrahm

What are the risk factors of Tobacco use as a society and as State?

Arsema Merid Mekonnen

Advisor: Christopher Merkord

Characteristics of Children with Autism and Autism Spectrum Disorders

Debra Frank

Advisor: Christopher Merkord



PRESENTATION LISTINGS

Influenza Outbreak Patterns During Minnesota Winters

Alex Hexum

Advisor: Christopher Merkord

Elucidating the Complimentary Action of Transcription Factors in Brain Area Patterning

Kervens Accilien, Emily Gallmeier, Ritu Pandey, Helena Malokeh Tiewah, Jonah Vigilant

Advisor: Adam Stocker

Identification of Emx2 Targets Using Based Proteomics Label-Free Mass Spectrometry: Wild type and Conditional Emx2 Knockout Mice Comparison

Asma Mohammed, Haylee Morin, Arsema Merid Mekonnen, Ansumana Sanyang

Advisor: Adam Stocker

Exploratory Analysis of Health and Greenness

Nicole Stepan

Advisor: Christopher Merkord

Analyzing the Orbital Periods of Exoplanets in Relation to Mass

Alexander Bohn

Advisor: Christopher Merkord

Do C4 plants need the PPK regulatory protein?...Maybe Not! A study of a PDRP-less C4 plant.

Alex MacGregor, Chaney Jambor

Advisor: Chris Chastain

Effects of Temperature on Bob White Quail Populations and Distributions

David Hutcheson

Advisor: Christopher Merkord

Antipredator behavior of Pahrupm Poolfish with implications for conservation of endangered insular fishes

Bailey Gillis

Advisor: Brian Wisenden

BUSINESS

How to Park like an Entrepreneur

William Reul, Seth Langbehn

Advisor: Siwei Zhu

Overview of Chinese Car Market

Robert Haarstad

Advisor: Ruth Lumb

Notification System (Website + Application)

Kenan Gargovic

Advisor: Andrew Chen

Business Applications of Artificial Intelligence (Supply-chain and AI)

Nimrah Sohail

Advisor: Vinod Lall

Cross Cultural Management and Organizational Behavior

Emma Darkwa

Advisor: Peter Geib

Conservation Values as Observed in Costa Rican Culture

Rachel Rusten, Clara Derby, Brittney Kakac, Nicole Stepan

Advisors: Christopher Merkord, Brian Wisenden

A Study of Women in the Workforce

Kara Schlepp

Advisor: Jane Pettinger

How to pick your schedule like an entrepreneur?

Rahil Pereira, Shawn Kontrec, Collin Hines, Michael Mach

Advisor: Siwei Zhu

The Insight of Marketing Strategies from class learning: H&M Case

Muhammad Azam Awan

Advisor: Wooyang Kim

The Impacts of the 2018 Tax Reform in 2019

Jess Lhotak, Jordan Sillerud, Shana Onstad, Caleb Walz

Advisor: Kim Mollberg

Internet of Things and Blockchain Technology: A Comparison of Supply Chains

Christopher Dufault

Advisor: Vinod Lall

Using Entrepreneurial Thinking to Design a Financial Literacy Course

Christopher Dufault

Advisor: Siwei Zhu

CHEMISTRY

*Analogs of the Drug Antipyrine:
Synthesis of 1-Acyl-2-Methyl Analogs*

Eric Gibbons

Advisor: Craig Jasperse

*Analogs of the Drug Antipyrine:
Synthesis of C₄-Formyl and C₄-
Aminomethyl Analogs*

Matthew Anderson

Advisor: Craig Jasperse

*Analogs of the Drug Antipyrine:
Synthesis of C₄-Alkylamino Analogs*

Yaa Pokua, Osei Sarpong

Advisor: Craig Jasperse

*Analogs of the Drug Antipyrine:
Synthesis of 2-Acyl-1-Phenyl Analogs*

Logan Spooner

Advisor: Craig Jasperse

*Investigating the effect of antibiotics on
phage production by *Microbacterium
foliorum**

**Baylee Hedstrom, Benjamin Hastad,
Jacob Tesch, Zhila Ghafour**

Advisors: Sumali Pandey, Michelle
Tigges

*Analogs of the Drug Antipyrine:
Synthesis of Dihydro and N₁-alkyl-
Dihydroantipyrine Analogs*

Brent Schulte

Advisor: Craig Jasperse

*Analogs of the Drug Antipyrine:
Synthesis of N₁-Alkyl-N₂-Acyl Analogs*

Ali Hassan

Advisor: Craig Jasperse

*Isolating a Bacteriophage for
*Microbacterium foliorum**

Alexis Cory, Baylee Hedstrom

Advisor: Sumali Pandey, Michelle
Tigges

*Phage Genome Extraction and
Sequencing*

**Anna Madsen, Jacob Mehlhoff, Jenna
Wegscheid, Bailey Dominick**

Advisors: Sumali Pandey, Michelle
Tigges

*Isolation of bacteriophage through
infection of *Cryobacteria**

Anna Madsen, Kelsey Leach

Advisor: Michelle Tigges

Isolation of bacteriophage Etta

Anna Madsen

Advisors: Sumali Pandey, Michelle
Tigges

*Duration of behavioral and physiological
responses to alarm cues in zebrafish:
predator vigilance and anxiety in humans*

Philip Larson

Advisors: Brian Wisenden, Shawn
Garrett

*Validation of High-Performance Liquid
Chromatography Analytical Method*

Gabrielle Williams

Advisors: Richard Lahti, Zachary

Morseth

*Bioinformatic Modeling for the Inquiry
of the EA cluster of *Microbacterium
Bacteriophages**

**Chaney Jambor, Amber Lothspeich,
Katie Olson, Alexis Cory**

Advisors: Michelle Tigges, Sumali
Pandey

*The development of the ultraviolet-
visible spectroscopy method to quantify
acetaminophen in pharmaceutical
products*

Amanda Lee

Advisor: Richard Lahti, Zachary
Morseth

COMMUNICATION AND JOURNALISM

*Anxiety and Depression: An examination
of the impacts of mental health
diagnoses and the management of
romantic relationships*

**Shandy Newton, Audrey Moeller,
Morgan Kraft, Amanda Mitchell,
Angela Dahl**

Advisor: Jason Anderson

*Parental alcoholism: An exploration of
the communication behaviors of adult
children of alcoholics*

**Anna Grindeland, Kalli Kalpakoff,
Michael Ferris, Brynna Johnson,
Madison Larsen**

Advisor: Jason Anderson



PRESENTATION LISTINGS

An exploration of the relationship between involvement in athletics and communication competency

Shannon Blomgren, Andres Andresen, Ean Deno, Tristan Dallman, Travaun Coad

Advisor: Jason Anderson

Tipping in Restaurants: Experiment manipulating Female Appearance Factors

John Bates, Jeana Chamberland, Katherine Roberts, Aubrey Hill, Hannah Hancock

Advisor: Jason Anderson

Relationship maintenance behaviors: A comparison of geographically close vs long-distance relationships

Ashley Eggerm, Haley Auger, Karissa LaMont, Esther Kjolhaug, Kelsey English

Advisor: Jason Anderson

COMPUTER SCIENCE AND INFORMATION SYSTEMS

Machine Learning on Mobile Devices using TensorFlow

Elias Eid

Advisor: Andrew Chen

Raspberry Pi Weather Station

Ryan Anderson

Advisor: Andrew Chen

Designing a General Webserver on Minimal Hardware

Sam Kivisto

Advisor: Andrew Chen

Server-Side Scripts for an Alternative to Advertisements in Web Applications

Tanner Kostuch

Advisor: Andrew Chen

An In-Browser Alternative to Advertisements

Joshua Cervenka

Advisor: Andrew Chen

Arduino gaming controller Android

Thomas Lieser

Advisor: Andrew Chen

Maze Solving Robot

Yik Ping Khoo

Advisor: Andrew Chen

Note-Worthy Music

Jacob Schleis

Advisor: Andrew Chen

Notification System (Website + Application)

Kenan Gargovic

Advisor: Andrew Chen

Using PHP and MySQL to Develop an Advising Tool

Christopher Nichols

Advisors: Kristofer Schlieper, Andrew Chen

Human Face Detection

Santosh Chapagain

Advisor: Andrew Chen

AI Using Python in Relation To Gaming

James Fullah

Advisor: Andrew Chen

Raspberry Pi Weather Station

Casey Vargo

Advisor: Andrew Chen

Marine Tide-pool management System

Joshua DeNio

Advisors: Steve Lindaas, Brian Wisenden

Marine Tide-pool Management Project

Heecheon Park

Advisors: Andrew Chen, Steve Lindaas, Brian Wisenden

AI using Python in Relation to Gaming

Ayokunle Jaiyeoba, James Fullah

Advisor: Andrew Chen

Machine learning and virtual assistant

Priyash Kafle

Advisor: Andrew Chen

Bar code Scanning

Seid Mohammed Redi

Advisor: Andrew Chen

Modern Mobile Development and Integration

Kyle Dahn

Advisor: Andrew Chen

COUNSELING AND STUDENT AFFAIRS

Analysis of Self: Helping Yourself to Help Others

Janet Bechtold

Advisor: Taryn Akgul

EDUCATION

Principal Perceptions on Preventing and Responding to Challenging Behaviors

Madison Radel

Advisor: Sung Ok Park

The Field of Occupational Therapy

Lexi Heil

Advisor: Keri DeSutter

Early Literacy Development Assessment of a Child

Lovely Singh

Advisor: Erin Gillett

Unpacking Digital Tools: A Mindful Lens On 4 Innovative Applications for Early Literacy Instruction

Micaela Feldt

Advisor: Daniel Olufemi

Incorporating Technology into Mathematics Teaching and Learning

Rebecca Hagert, Noelle Bergerson

Oral Presentation

Advisor: Carol Okigbo

Playing with Patterns

Maria Semenko, Matalynn Soderberg, Madison Oswald

Advisor: Carol Okigbo

What do you MEAN?

Kendall Schauer, Emily Opatril, Hannah Loos

Advisor: Carol Okigbo

More Ways to Multiply

Mariah Hendrickson, Mark Peterson, Kenadee Solmonson, Ayrika Zitzmann

Advisor: Carol Okigbo

Reactions to Ratios

Breanna Sittig, Emily Thedens, Alexis Skoglund

Advisor: Carol Okigbo

ECONOMICS, LAW AND POLITICS

Determinants of order selection error rates in a broadline food distribution warehouse: Does cultural bias matter?

Jared Weber

Advisors: Oscar Flores-Ibarra, Tonya Hansen

Sanctuary Cities and their Respective Effect on Crime Rates

Adam Schutt

Advisors: Tonya Hansen, Oscar Flores-Ibarra

The effect of micro-credit on women empowerment and the extreme poor in Bangladesh

S Nafisa Mahabub

Advisors: Tonya Hansen, Oscar Flores-Ibarra, Steven Bolduc

Labor market gender discrimination and the effect of fertility reduction on economic growth in Nigeria

Karin Ifesi

Advisors: Tonya Hansen, Steven Bolduc

Fertility rates in Sierra Leone: What causes them to be so high?

Madalyn Winger

Advisors: Tonya Hansen, Oscar Flores-Ibarra

Analyzing the effects of moral hazard on the United States financial sector

Matthew Odegard

Advisor: Tonya Hansen

Shifting consumer preferences in the U.S. automobile industry from 2007-2017: A demand and supply analysis

Rahil Pereira

Advisor: Tonya Hansen

An economic analysis of paying college athletes

Travis Russell

Advisor: Tonya Hansen

The marriage premium: Where does it exist and for whom?

Nicole Kurtti

Advisor: Tonya Hansen



PRESENTATION LISTINGS

What do we know about U.S. immigration? An economic perspective

Tahmid Hossain

Oral Presentation

Advisor: Tonya Hansen

ENGLISH

Confessionalist Poetry: Understanding Strength Through Words

William Lewandowski

Advisor: Kevin Zepper

HEALTH AND PHYSICAL EDUCATION

A Critically Appraised Topic: Kinesio Tape Effectiveness for Improving Ankle Stability/Proprioception

Katelyn Rohr

Advisors: Jay Albrecht, Dawn Hammerschmidt

A Critically Appraised Topic: Common Personality Factors That Affect An Athlete's Success At Higher Competition Levels

Ali Hoffman

Advisors: Dawn Hammerschmidt, Jay Albrecht

A Critically Appraised Topic: A Comparison of the Efficacy of Whole-Body Cryotherapy and Cold-Water Immersion Therapy.

Patrick Liebl

Advisors: Jay Albrecht, Dawn Hammerschmidt

A Critically Appraised Topic: The Accuracy of Skinfold Measurement Techniques In Predicting Minimum Competition Weight

Grant Brendemuhl

Advisors: Jay Albrecht, Dawn Hammerschmidt

A Critically Appraised Topic: The Effect of Physical Activity on Recovery from Concussion

Chikara Hiraoka

Advisors: Jay Albrecht, Dawn Hammerschmidt

A Critically Appraised Topic: Interpersonal Relationships and How They Affect Rate of Return-to-Play (RTP)

Morgan Frey

Advisors: Jay Albrecht, Dawn Hammerschmidt

A Critically Appraised Topic: Hyperbaric Oxygen Therapy and Post-Concussion Syndrome

Morgan Anderson

Advisors: Dawn Hammerschmidt, Jay Albrecht

HISTORY, LANGUAGE CRITICAL RACE AND WOMEN'S STUDIES

Planting Ideas: Recognizing the Interdisciplinary Connection Between Women and the Environment

Elizabeth LeDoux

Advisor: Kandace Creel Falcon

The journey of the Kealy family

Hunter Kisner

Advisor: Yolanda Arauza

Lebanese and Hajj Family Emigration in the Twentieth Century

Grace Ward

Advisor: Yolanda Arauza

Family Ancestry and Immigration

Hannah Eikren

Advisor: Yolanda Arauza

Immigration of Single Mothers from Sweden to the United States in the early 1900s

Taylor Dirks

Advisor: Yolanda Arauza

Religious Freedom in the Americas

Matthew Shaffer

Advisor: Yolanda Arauza

An Untold Journey

Jaxon Seufzer

Advisor: Yolanda Arauza

*Journey for the American dream:
Mathias Arth's story.*

Hunter Bussman

Advisor: Yolanda Arauza

*Foreign Politics, German Immigration,
and Family Ancestry*

Ross Huber

Advisor: Yolanda Arauza

Family Ancestry and Immigration

Benjamin Brenden

Advisor: Yolanda Arauza

Roland Duff: Pathfinder

Levi Seidel

Advisor: Steven Hoffbeck

The Journey of Children to America

Katherine Marshall

Advisor: History, Languages,
Critical Race and Women's Studies,
Department of Yolanda Arauza

*German-Russian Immigration to North
Dakota in the Early 1900's*

Emma Viken

Advisor: Yolanda Arauza

Journey to America

Beau Driscoll

Advisor: Yolanda Arauza

Family Ancestry

Austin Thune

Advisor: Yolanda Arauza

Norwegian Communities

Wyatt Demarais

Advisor: Yolanda Arauza

Polish Immigration-Why Minnesota?

Slade Kangas

Advisor: Yolanda Arauza

*The Formation of the Second Person
Formal and Informal Pronoun in
Spanish*

Emily Aman

Advisor: Michael Martinez

Fetal Alcohol Syndrome

Hannah Augustus

Advisor: Nathan Clarke

*Medical Marijuana: The Next Legal
Medication?*

Madison Cichy

Advisor: Nathan Clarke

The French Fur Trade of the New World

Elizabeth LeDoux

Advisor: Yolanda Arauza

*Immigration from Poland: Journey to
America*

Roman Kotas

Advisor: Yolanda Arauza

German Immigration to America

Alexandra Wende

Advisor: Yolanda Arauza

*German Migration to the US and the
American Dream*

Patrick Johnson

Advisor: Yolanda Arauza

MATHEMATICS

*"Who am I?" Using the Van Hiele
Levels of Geometric Thought*

**Kia Grindland, Rachel Saville, Morgan
Richards**

Advisor: Carol Okigbo

RNNs and Gradient Descent

Luke Sanderson

Advisor: Damiano Fulghesu

Wave Equation Model

Nitesh Shankat

Advisor: Ashok Aryal

*Incorporating Technology into
Mathematics Teaching and Learning*

Rebecca Hagert, Noelle Bergerson

Advisor: Carol Okigbo

*Using Manipulatives and Models
to Foster Understanding of Two-
Dimensional Shapes*

**Ellie Rutten, Ella Von Ruden, Kaitlin
Meyer**

Advisor: Carol Okigbo

*Hands-On Activities: Essential Element
in Elementary School Measurement
Instruction*

Karli Williams, Alexis Homme

Advisor: Carol Okigbo

Tic Toc Around the Clock

Abigail Engelstad, Alyssa Hovland

Advisor: Carol Okigbo



PRESENTATION LISTINGS

Tessellating the Idea of Tessellations
**Kaley Clark, Alexander Cimochoowski,
Stacy Opp, Hannah Vorderbruggen**
Advisor: Carol Okigbo

*Cinematic Genius of the 80s: John
Hughes*
Kayla Swedberg
Advisor: Anthony Adah

*The Subtext of the Films of Mike
Nichols*
Chancey Plagman
Advisor: Anthony Adah

Missing Digits for Addition
**Taylor Beynon, Hailey Blazinski-Cuhel,
Lexie Wallace**
Advisor: Carol Okigbo

*The Authorship of Aardman Animation
Studios*
Chance Rynerson
Advisor: Anthony Adah

*Authorship in the Video Games of Hideo
Kojima*
Ryan Nordskog
Advisor: Anthony Adah

*An Introduction to Cryptographic
Methods*
Rachel Schmiess
Advisor: Damiano Fulghesu

*Yoko Taro: Creating Emotions from
Games*
Braden DeSmith
Advisor: Anthony Adah

*Paul Thomas Anderson: Development
and Character*
Noah Smith
Advisor: Anthony Adah

MEDIA ARTS AND DESIGN

Burtonesque
Summer Storm
Advisor: Anthony Adah

*Cai Chusheng and his Direction of Film
in Communist China*
Peyton Krump
Advisor: Anthony Adah

*Chris Marker: Implementing Passions
into Film*
Andrew Ramlet
Advisor: Anthony Adah

The Controversial Lars Von Trier
Jensina Bailly
Advisor: Anthony Adah

Surrealism: Then and Now
Zachary Howatt
Advisor: Anthony Adah

*Emmanuel Lubezki: Long Takes for
Interior Meaning*
Emily Harmon
Advisor: Anthony Adah

*Exploring Camera Direction: David
Fincher*
Spencer Ulyyott
Advisor: Anthony Adah

*Grasping Adulthood & Maturity: The
Characters of Wes Anderson*
Kyle Odefey
Advisor: Anthony Adah

*David Fincher's Use of Technique and
Technology as a Form of Control and
Style*
Rodrigo Costa
Advisor: Anthony Adah

Unveiling Yorgos Lanthimos' Characters
Matthew Kotlan
Advisor: Anthony Adah

Chuck Jones: Slapstick and Surrealism
Austin Bieri
Advisor: Anthony Adah

May I Have Your Attention
Peter Hoffman
Advisor: Anthony Adah

Building Off of Brad Bird
Cameron Gerrity
Advisor: Anthony Adah

Cinematic Art: Dario Argento
Bernt Podratz
Advisor: Anthony Adah

Jennifer Lee and Directing with Emotion
Alyssa Huete
Advisor: Anthony Adah

Roger Deakins' Cinematography

Sean Rice

Advisor: Anthony Adah

*Spielberg & The Auteur Theory in
Directing and Producing*

Kendra Johnson

Advisor: Anthony Adah

Peter Jackson as an Auteur

Justus Carlson

Advisor: Anthony Adah

NEW RIVERS PRESS

New Rivers Press

**Sarah Ernster, Alyssa Berry, Alexandra
Ferguson, Lauren Phillips**

Advisors: Nathan Rundquist, Kevin
Carollo, Travis Dolence

(SCHOOL OF) NURSING AND HEALTHCARE LEADERSHIP

*Quality Improvement in Assisted Living
Facilities - Attitudes and Perceptions of
Leaders and Managers*

Amy Wiese

Advisor: Jitendra Singh

PHYSICS AND ASTRONOMY

*Introductory Astronomy Interactives
developed with Undergraduates*

**Andrew Louwagie Gordon, Samuel
Holen**

Advisor: Juan Cabanela

*Measuring the Dipole Moment of a
Human Heart Using a Student-built
ECG*

**Melissa Foley, Evan Anderson, Adam
Kline**

Advisors: Ananda Shastri, Linda
Winkler

*Sharing the Universe Through the
Planetarium*

Melissa Foley, Boston Heaford

Advisors: Juan Cabanela, Sara Schultz

*Preparing to Observe TESS Exoplanet
Candidates*

Isobel Snellenberger, Adam Kline

Advisor: Matthew Craig

B-Band Stretch Method for SN 2011fe

Jane Glanzer

Advisor: Matthew Craig

PLANETARIUM

*Education and Entertainment for
children in the MSUM Planetarium*

Callie Tescher

Advisor: Sara Schultz

*Exploring the Solar System through
Gustav Holst's The Planets Suite*

Abigail Bormann

Advisor: Sara Schultz

History of Aliens in Popular Media

Erick Quintana

Advisor: Sara Schultz

PSYCHOLOGY

*Anxiety and Behavior: Brief Cognitive
Behavioral Therapy in School with a
Ten-Year-Old Boy Using the Coping Cat
Program*

Sarah Bernhardt

Advisor: Peg Potter

*Using Performance Feedback and Self-
Graphing to Improve Writing Fluency*

Grant Fodness

Advisor: Mary Dosch

*The marriage premium: Where does it
exist and for whom?*

Nicole Kurtti

Advisor: Tonya Hansen

*Perceived Sexual Aggression and
Platonic Touch in Men*

Salina Alameda, Monica Vega

Advisor: Sarah Edwards



PRESENTATION LISTINGS

The Effectiveness of the Homework, Organization, and Planning Skills (HOPS) Intervention for a Middle School Student Diagnosed with ADHD

Ryan Hoiland

Advisor: Peg Potter

Age Bias in College Students: Perception of Elderly Adults

Anna Ellenson

Advisor: Christine Malone

Gaze Patterns of Social and Nonsocial Stimuli: A Possible Early Marker for Autism Spectrum Disorder

Ashley Doll

Advisor: Elizabeth Nawrot

SOCIOLOGY AND CRIMINAL JUSTICE DEPARTMENT

Ageism Awareness: Do Young Adults at MSUM Know About Elderly Bias?

Janelle Blanchet

Advisor: Lee Vigilant

SPEECH LANGUAGE AND HEARING SCIENCES

Early Language Development Patterns in Children with High-Functioning Autism

Taylor Braegelman

Advisor: Tina Veale

Evidence-Based Techniques to Encourage Social Initiation in Young AAC Users

Mariah Benz

Advisor: Kris Vossler

Reading Comprehension in Children with Specific Language Impairment: Narrative vs. Expository Text

Kayla Werner

Advisor: Elaine Pyle

The Effect of Maternal Mental Health on Childhood Language Development

Paige Wallis

Advisor: Kris Vossler

The Importance of Semantics in Written Narratives of Children with Autism

Kelsey Kowalski

Advisor: Tina Veale

School-Based Service Delivery Models Compared to Traditional Delivery: A Survey of Speech-Language Pathologists

Meredith Egeland

Advisor: Kris Vossler

Exploring the Experiences of Communication Partners of Persons with Parkinson's Disease: Qualitative Interviews

Jackie Ellefson

Advisor: Nancy Paul

Speech-Language Pathologists' Perspectives on Preparedness for Interprofessional Collaborative Practice in School Settings

Rachel Sawatzky

Advisor: Elaine Pyle

Treatment of Social Communication Deficits in Adults with Traumatic Brain Injury

Taylor Stanton

Advisor: Nancy Paul

The most effective techniques for improving speech production in preschoolers with speech sound disorders

Erica Embertson

Advisor: Kris Vossler

Barriers to going to the doctor: perspectives of families affected by autism

Andrea Spragg

Advisor: Rachel Stotts

The Benefits of Using Picture Exchange Communication System (PECS)

Jena Dahl

Advisor: Rachel Stotts

Narratives of Children with Autism: A Discussion of Syntax and Intervention

Andi Arp

Advisor: Kris Vossler

Exploration of Complexity Principles in Intervention for Preschool Phonological Delays

Asha Throntveit

Advisor: Kris Vossler

Communication Patterns of Children with Hearing Loss

Katelyn Tallas

Advisor: Tina Veale
Nancy Paul

The Emerging Role of the SLP in Chronic Traumatic Encephalopathy

Autumn Muckenhirn

Advisor: Nancy Paul

SPEECH LANGUAGE HEARING CLINIC

Use of Technology to Advance Communication and Language Development in Children with Autism Spectrum Disorder

Shannon Sitz

Advisor: Elaine Pyle

SLP Feeding and Swallowing Assessment Tools for Infants in Neonatal Intensive Care

Marah Greff

Advisor: Nancy Paul

Speech-Language Pathologists' Perspectives on Preparedness for Interprofessional Collaborative Practice in School Settings

Rachel Sawatzky

Advisor: Elaine Pyle

The Impact of Low Socioeconomic Status (SES) On Dual Language Learning in Young Children

Katlyn Burkey

Advisors: Tina Veale, Kris Vossler

Exploration of Complexity Principles in Intervention for Preschool Phonological Delays

Asha Throntveit

Advisor: Kris Vossler

Communication Patterns of Children with Hearing Loss

Katelyn Tallas

Advisors: Tina Veale, Nancy Paul

The Emerging Role of the SLP in Chronic Traumatic Encephalopathy

Autumn Muckenhirn

Advisor: Nancy Paul

The Autistic Mind: Thinking and Learning

Kelli Tonn

Advisor: Tina Veale

STUDY ABROAD

A Confluence of Quality: Academic, Cultural, and Personal Growth through Study Abroad

Christine Lidenberg. Daniel Aarness

Advisor: Janet Brandau

VISUAL ARTS

Coping with Homelessness: The Potential for Art Therapies with Children

Kayli Fitz

Advisor: Bradley Bachmeier

Exploring Camera Direction: David Fincher

Spencer Ulyott

Advisor: Anthony Adah

Quentin Tarantino: Shot Composition

Alex Samek

Advisor: Anthony Adah

Emmanuel Lubezki: Long Takes for Interior Meaning

Emily Harmon

Advisor: Anthony Adah

Sofonisba Anguissola: The Invisible Artist

Rebecca Oehler

Advisor: Anna Arnar

The Power of Allegory: How Ambrogio Lorenzetti's Frescoes Served as Political Propaganda in Sienna, Italy

Carrie Kinslow

Advisor: Anna Arnar

The Medici Family: Political Influence through Majolica and Clay

Alatera McCann

Advisor: Anna Arnar

Paternal Shame: Giotto's Frescoes in the Scrovegni Chapel

Jill Johnston

Advisor: Anna Arnar



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