

Whitworth Digital Commons
Whitworth University

SIRC Programs

Conferences and Events

4-16-2011

Spokane Intercollegiate Research Conference 2011

Whitworth University

Follow this and additional works at: http://digitalcommons.whitworth.edu/sirc_programs

Recommended Citation

Whitworth University, "Spokane Intercollegiate Research Conference 2011" Whitworth University (2011). *SIRC Programs*. Paper 2.
http://digitalcommons.whitworth.edu/sirc_programs/2

This Conference Proceeding is brought to you for free and open access by the Conferences and Events at Whitworth University. It has been accepted for inclusion in SIRC Programs by an authorized administrator of Whitworth University.

9TH ANNUAL

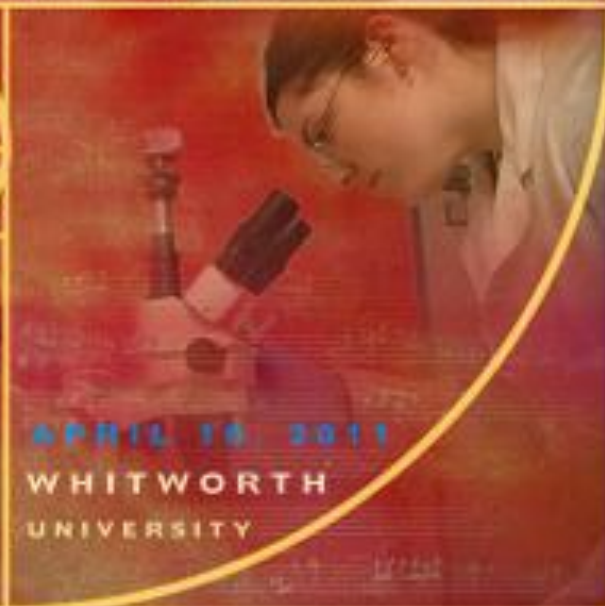
SPOKANE

INTERCOLLEGIATE

RESEARCH

CONFERENCE

AN ALL-DAY CONFERENCE OF STUDENT RESEARCH IN ALL ACADEMIC DISCIPLINES



APRIL 16, 2011
WHITWORTH
UNIVERSITY

Spokane Intercollegiate Research Conference

Whitworth University

April 16, 2011

Contents

Conference Speaker Abstract and Biographical Information5
Schedule of Presentations and Poster Sessions7
List of Abstracts, by Session19
List of Student Participants67
List of Faculty Sponsors and Moderators72

The 2011 Spokane Intercollegiate Research Conference was planned by the following:

Tricia Duffey

Fred Johnson

Deanna Ojennus

Kathryn Picanco

Patrick Van Inwegenn

Gonzaga Representative: Patricia Terry

Student Representative: Brisa Calderon

Program Support: Kavita George-Terrells

Welcome from the President of Whitworth University

Whitworth University is proud to welcome students from Eastern Washington University, Gonzaga University, Washington State University (Spokane), Spokane Community College and Whitworth to the ninth annual Spokane Intercollegiate Research Conference. This event provides an opportunity for students to celebrate the research they have completed and to disseminate the results of their work to their peers and the public. In so doing, they join an academic enterprise that for centuries has advanced the frontiers of knowledge and applied that knowledge to solving the world's most complex problems.

The great medieval philosopher and theologian Thomas Aquinas may be considered one of the fathers of the modern university and, in many ways, of SIRC. He recognized reason as one of humankind's greatest gifts and that the greatest use of human reason was to pursue knowledge and truth wherever they may be found. His careful examination of the natural world (science) led him to understandings of history, philosophy and theology (humanities) and of economics, politics and psychology (social science) that had tremendous influence on Western thought and that are reflected in the breadth of subjects explored at this conference.

Aquinas also is known for an extraordinary body of writings in which he shared his knowledge with the world. As we make discoveries and gain insights through our research, we bear the responsibility to submit our work to the review of others in our field and to share what we have learned with the broader public. Peer review and public dissemination go hand in hand with the underlying research in expanding the body of knowledge needed to solve the critical problems we face. The students presenting at SIRC take that responsibility seriously.

On behalf of the faculty, staff and students of Whitworth University, I welcome you to our campus and applaud your contributions to the noble and important enterprise of academic research.

Sincerely,

Beck A. Taylor

President Whitworth University

Conference Schedule

8:30 – 10:30 a.m.	Check-in, Coffee and Pastries Weyerhaeuser, Avista Square
9:00 – 10:15 a.m.	Sessions 1 - 11 Weyerhaeuser and Dixon
10:30 – 11:45 a.m.	Sessions 12 - 22 Weyerhaeuser and Dixon
	Session 23 – Morning Poster Session Weyerhaeuser, Room 111
Noon – 12:30 p.m.	Lunch (by Reservation) for participants and faculty sponsors Hixson Union Building, Multipurpose Room
12:30 – 1:15 p.m.	Keynote Speaker, Andrea Palpant Dilley Hixson Union Building, Multipurpose Room
1:30 – 2:45 p.m.	Sessions 24 - 31 Weyerhaeuser and Dixon
	Session 32 – Afternoon Poster Session Weyerhaeuser, Room 111
3:00 – 3:50 p.m.	Sessions 33 - 40 Weyerhaeuser and Dixon
4:00 – 5:30 p.m.	Session 41 Screening of <i>In Time of War</i> , Panel Discussion Weyerhaeuser, Robinson Teaching Theater

Conference Speaker

Keynote Address: Andrea Palpant Dilley. “Images Make Arguments: Inside the Ethics, Mechanics, and Research Methods of Documentary Filmmaking”,
Andrea Palpant Dilley

Walter Murch—editor of *The Godfather*, *Apocalypse Now*, and other films—writes in his book *In the Blink of an Eye*, “You could sit in one room with a pile of dailies and another editor could sit in the next room with exactly the same footage and both of you would make different films out of the same material.” Reiterated in terms of research, two different editors with the same collection of “data” can come up with two entirely different conclusions. This research process—and its variability—begins in shooting, extends through into editing, and involves the same ethical responsibility as any other research process that uses data to persuade an audience of a particular theory or argument. In *Amusing Ourselves to Death*, media critic Neil Postman contrasts “idea propositions”—what you read in a book—with “image propositions”—what you see on a screen. Images make arguments, he says. How does a documentary posit an argument? Today’s keynote address hinges on this important question. First, we have to understand the mechanics of the medium and how images (as data and/or propositions) are put together. Second, we have to understand the nature of the medium itself as a form of persuasion. With the mechanics and the medium in mind, the broad implications of ethical responsibility come into focus and challenge us to think critically about how image-based media construct and convey meaning to an audience. According to Bill Nichols in *Introduction to Documentary*, “What we know, and how we come to believe in what we know, are matters of social importance. Power *and* responsibility reside in knowing.”

Biographical Information



Andrea Palpant Dilley grew up in Kenya as the daughter of Quaker missionaries. She attended Whitworth University where she graduated summa cum laude with bachelor’s degrees in English Literature, Writing, and Spanish. Her written work has appeared in *Rock & Sling*, *Geez Magazine*, and *the Utne Reader*, as well as the anthology *Jesus Girls: True Tales of Growing up Female and Evangelical* (Wipf and Stock).

As a documentary director, writer and producer, she has produced content for HDNet, the Hallmark Channel, American Public Television, and various PBS stations (KAET, KCTS, KSPS) and shown her work at the Amnesty International Film Festival and the Northwest Asian American Film Festival. Her largest project to date was produced in collaboration with Whitworth University, a 60-minute documentary on the Japanese American experience of WWII in the Northwest. Entitled *In Time of War*, the program in 2005 was broadcast nationwide in major markets via American Public Television.

As a documentary producer, Andrea has co-taught with Leonard Oakland the Jan-term course Documentary and Avant Garde Film, in which they explored the documentary as a form of artistic expression, public argumentation, and persuasion. Joining her experience as a practitioner with her interest in theoretical analysis of media, Andrea will begin a Masters in Media Studies at the University of Texas in the fall.

Currently, she lives with her husband and daughter in Austin, Texas where she is at work on a spiritual memoir slated for publication in spring 2011 by Zondervan/HarperCollins. The book explores her experience of growing up in the Christian church, encountering a crisis of faith in her early twenties, and leaving the church for a period of time.

The keynote address will begin at 12:30pm in the Hixon Union Building (HUB) and is open to all conference participants. Andrea Palpant Dilley will also be part of a discussion panel at the end of Special Session 41 at 4:00pm for a Screening of "In Time of War" in Robinson Teaching Theater in Weyerhauser 107.

Schedule of Oral and Poster Sessions

Session 1 9:00 – 10:15 a.m. Room 203 Weyerhaeuser

Faculty Moderator: Anna Marie Medina

- 1A Elizabeth Hughes. "Hit it and Quit it: The Relationship Between Self-Esteem, Alcohol Use, and Hooking Up Amongst College Students."
Faculty Sponsor: Vikas Gumbhir
- 1B Samantha Agopsowicz. "Suburban Gangsters: Hip-Hop Consumption and Delinquency at an Elite Private University."
Faculty Sponsor: Vikas Gumbhir
- 1C Krista Van Dyke. "Unstalling the Revolution? College Students' Attitudes Opinions and Expectations of Career Marriage and Family Life."
Faculty Sponsor: Vikas Gumbhir

Session 2 9:00 – 10:15 a.m. Room 204 Weyerhaeuser

Special Session. *New Readings of the Canterbury Tales and Middle English Literature*

Faculty Moderator: Melissa Sprenkle

- 2A Natalie Segó. "Chaucer and Middle English Literature."
Faculty Sponsor: Doug Sugano
- 2B Paula Gutierrez-Neal. "Subjugating the Wyf: The Articulated Aristocratic Privilege of Raptus in Middle English Literature and Culture."
Faculty Sponsor: Doug Sugano
- 2C Caitlin Wheeler. "In the Name of the Mother and the Son and the Holy Spirit: Female Imagery in Medieval Religious Literature."
Faculty Sponsor: Doug Sugano
- 2D Lesley Richter. "'Because that no frute of us doth procede': Exploring the Role of Children in Medieval Literature."
Faculty Sponsor: Doug Sugano

Session 3 9:00 – 10:15 a.m. Room 205 Weyerhaeuser

Faculty Moderator: Michael Treleaven

- 3A Corey Dugan. "Gypsies in Spain Friend or Foe?"
Faculty Sponsor: John Yoder
- 3B Kyle Stevenson. "Independence Dearly Fought For: The Finnish Decision to Fight the Soviet Union."
Faculty Sponsor: Michael Treleaven
- 3C Katie Seevers. "The Changing Zionist Narrative: Analyzing Online Diaries as a Way to Gauge Israeli Opinion."
Faculty Sponsor: John Yoder

Session 4 9:00 – 10:15 a.m. Room 303 Weyerhaeuser

Special Session. *Models in Mathematical Biology*

Faculty Moderator: Michael Rempe

- 4A Annie Didier. "Extended Two-Process Model of the Human Sleep-Wake Cycle to Include the Effects of Caffeine Consumption."
Faculty Sponsor: Michael Rempe

- 4B Branden Lowe. "The Introduction of Goldfish into a Trout Populated Lake."
Faculty Sponsor: Michael Rempe
- 4C Mark Franklin. "Using a Mathematical Model to Analyze the Dynamics of the REM and NREM Sleep Cycle."
Faculty Sponsor: Michael Rempe

Session 5 9:00 – 10:15 a.m. Room 304 Weyerhaeuser

Faculty Moderator: Richard Schatz

- 5A Tae-Hun Lee. "The History of the Popular Korean Democratic Movement in the Latter Half of the Twentieth Century."
Faculty Sponsor: Corliss Slack
- 5B Katelin Knox. "Analysis of the World Palm Oil Market."
Faculty Sponsor: Richard Schatz
- 5C Sarah Marken. "Mental Models: Affecting Change and Shaping or Reshaping East Africa for the Future."
Faculty Sponsor: Craig Hinnenkamp

Session 6 9:00 – 10:15 a.m. Room 305 Weyerhaeuser

Faculty Moderator: Brad Sago

- 6A Amanda Burnett. "The Effects of Cause-Based Marketing on Perception of Brand Equity."
Faculty Sponsor: Brad Sago
- 6B Jocelyn Swalm. "The Effectiveness of Business Advertising on Facebook and Twitter to College Students."
Faculty Sponsor: Brad Sago
- 6C Andreas Samus. "The Implications of Prevailing Brand Images of Western Products on the Branding Strategies of US Food Companies in the Malaysian Market."
Faculty Sponsor: Brad Sago
- 6D Ariella Chi. "How Lesser-Known Smaller Liberal Arts Institutions of Higher Education Can Attract and Retain International Students on a Traditional Undergraduate Track."
Faculty Sponsor: Brad Sago

Session 7 9:00 – 10:15 a.m. Room 106 Dixon

Faculty Moderator: Marianne Poxleitner

- 7A Jack Dunbar. "The Effect of Varying Levels of O₂ Exposure on the Concentration of Fecal Coliforms in Compost Piles Comprised of Biosolid Waste."
Faculty Sponsor: Frank Caccavo
- 7B Samantha Blake. "Discovering Bacteriophage Buzzy: Isolation and Analysis."
Faculty Sponsor: Marianne Poxleitner and Kirk Anders
- 7C Tara Togstad. "Restriction Digest of the Novel Bacteriophage Gumbie."
Faculty Sponsor: Marianne Poxleitner and Kirk Anders
- 7D Chelsea Stone and Erinleigh Caughron. "Mycobacteriophage Genome Annotation."
Faculty Sponsor: Marianne Poxleitner and Kirk Anders

Session 8 9:00 – 10:15 a.m. Room 107 Dixon

Faculty Moderator: Sara Ganzerli

- 8A Thomas Whitt. "The Effects of Stirring by Self-Generated Vortex Flows on Fertilization Efficiency of Broadcast Spawning Fish."
Faculty Sponsor: Jillian Caldwell

- 8B Jacob DeBorde, Max Magee. "Uniaxial Compressive Strength of Bricks Subject to Different Temperatures."
Faculty Sponsor: Sara Ganzerli
- 8C Greg Postlewaite, Sydney Ulliman, and Carl Buher. "The Beehive Kilns of Mica, Washington: A Walkthrough History of Brick Production."
Faculty Sponsor: Sara Ganzerli
- 8D Andrew Matsumoto, Derek Davis, Ryan Mathis, Jessica Monroe and Angela Weiss. "Connection Design for Wood Column Buckling."
Faculty Sponsor: Sara Ganzerli

Session 9 9:00 – 10:15 a.m. Room 108 Dixon

Faculty Moderator: Donna Pierce

- 9A Chez Ratum, Sabrina Topacio, and Marshall Hurson. "Book Embedding With the Genetic Algorithm."
Faculty Sponsor: Paul DePalma and Shannon Overbay
- 9B Josiah Donor. "An Application of Genetic Algorithms to Bayesian Belief Network Learning."
Faculty Sponsor: Susan Mabry
- 9C Nathan TeGrotenhuis. "Evolution of Biologically Inspired Dynamical Learning Systems Using a Hybridization of Direct and Indirect Generative Encodings."
Faculty Sponsor: Kent Jones

Session 10 9:00 – 10:15 a.m. Room 204 Dixon

Special Session. *Undergraduate Student Research in Special Education in the Spokane Public Schools*

Faculty Moderator: Thomas McLaughlin

- 10A Olivia Owen and Kevin Pierce. "The Effects of Employing a Structural Analysis to Choose and Implement an Academic Intervention for a Single High School Student with ADHD and OCD."
Faculty Sponsor: Kimberly Weber
- 10B Adam Skarr. "A Comparison of Direct Instruction Flashcards and Cover Copy Compare to Teach Spelling to Elementary Students with Learning Disabilities."
Faculty Sponsor: Thomas McLaughlin
- 10C Chelsae Komar. "The Effects of Direct Instruction Flashcards on Math Performance with Measures of Generalization."
Faculty Sponsor: Thomas McLaughlin

Session 11 9:00 – 10:15 a.m. Room 206 Dixon

Special Session. *Proyectos en Español*

Faculty Moderator: Kim Hernandez

- 11A Jaime Reuelta. "El Mercado Mexicano."
Faculty Sponsor: Kim Hernandez
- 11B Elizabeth Wall. "Leonor de la Cueva y Silva's Work to Change the Role of the Woman in the Spanish Golden Age."
Faculty Sponsor: Kim Hernandez

11C Nathan Gelinas. "Gangs in Latin America."
Faculty Sponsor: Kim Hernandez

Session 12 10:30 – 11:45 a.m. Room 206 Dixon

Special Session. *Proyectos en Español (Part II)*

Faculty Moderator: Kim Hernandez

12A Fatima Rodriguez. "*Sor Juana Ines de la Cruz.*"
Faculty Sponsor: Mike Fulton

12B Haley Krueger and Fatima Rodriguez. "*La Mara Salvatrucha.*"
Faculty Sponsor: Kim Hernandez

12C Dori Simpson. "Los papeles femeninos durante la revolución mexicana."
Faculty Sponsor: Natalia Ruiz-Rubio

Session 13 10:30 – 11:45 a.m. Room 204 Dixon

Special Session. *Projects in Modern Languages*

Faculty Moderator: Bendi Benson Schrambach

13A Christina Chea. "A Study of French Idiomatic Phrases."
Faculty Sponsor: Bendi Benson Schrambach

13B Julia Bovee. "The Lost Boys: The Untimely Deaths of Peter Pan and Le Petit Prince."
Faculty Sponsor: Bendi Benson Schrambach

13C Rachel Kelly. "La Femme Noire: Women in Senghor's Poetry."
Faculty Sponsor: Bendi Benson Schrambach

13D Desiree McIntire. "Cultural Differences in Advertising."
Faculty Sponsor: Bendi Benson Schrambach

Session 14 10:30 – 11:45 a.m. Room 108 Dixon

Special Session. *The Self Told Slant: Explorations in Creative Nonfiction*

Faculty Moderator: Nicole Sheets

14A Caitlin Wheeler. "Painting the Piankatank."
Faculty Sponsor: Nicole Sheets

14B Isabel Nelson. "It's Not That Easy."
Faculty Sponsor: Nicole Sheets

14C Bridger Landle. "One Man Clutches a Memory of Water."
Faculty Sponsor: Nicole Sheets

14D Sarah Glady. "Going North."
Faculty Sponsor: Nicole Sheets

Session 15 10:30 – 11:45 a.m. Room 107 Dixon

Special Session. *How to Operate a Postmodern Butterfly: The Literary Postmodernism of Kurt Vonnegut, Jorge Luis Borges, and Vladimir Nabokov*

Faculty Moderator: Fred Johnson

15A Natalie Segó. "Counteracting Death: Hope Found in Vonnegut's *Slaughterhouse Five*."
Faculty Sponsor: Fred Johnson

15B Jacquelyn Wheeler. "The Impossibility of Knowing in Borges' 'Tlön, Uqbar, Orbis Tertius.'"
Faculty Sponsor: Fred Johnson

15C Stephanie Jordan-Thompson. "Nabokov: Replicating Life on the Page."
Faculty Sponsor: Fred Johnson

Session 16 10:30 – 11:45 a.m. Room 203 Weyerhaeuser

Faculty Moderator: Brad Sago

- 16A Hannah Kinnier. "Comparing Use of Incentives in Survey Participation Among College Students."
Faculty Sponsor: Brad Sago
- 16B Callie Chestnut. "Identifying Desirable Characteristics of Vacations to College Seniors."
Faculty Sponsor: Brad Sago
- 16C Elizabeth Seccomb. "Purchasing Behaviors of College Seniors and Graduates For a Post-Graduation Fitness Center."
Faculty Sponsor: Brad Sago
- 16D Hayley Dannettell. "Price Sensitivity of Organic Products for College-Aged Students."
Faculty Sponsor: Brad Sago

Session 17 10:30 – 11:45 a.m. Room 204 Weyerhaeuser

Faculty Moderator: Patricia Bruininks

- 17A Aryn Gessel and Colin Zalewski. "CMC and Romantic Relationship Development."
Faculty Sponsor: Alan Mikkelson
- 17B Monica Calderon and Trista Van Berkum. "How Verbal Aggression and Communication Competence Affect Marital Satisfaction."
Faculty Sponsor: Alan Mikkelson
- 17C Stephanie Baker and Rhylee Smith. "Altruistic Lies in Romantic Relationships."
Faculty Sponsor: Alan Mikkelson
- 17D Rachel Mitchell and Whitney Hedgpeth. "Helping Behavior in a Chat Room Environment: Do the Numbers Matter?"
Faculty Sponsor: Patricia Bruininks

Session 18 10:30 – 11:45 a.m. Room 205 Weyerhaeuser

Faculty Moderator: Katey Roden

- 18A Kalah Dooley. "Desire and Chaos: The Fairies of *A Midsummer Night's Dream*."
Faculty Sponsor: Heather Easterling
- 18B Tayler Mustion. "If You Can't Perform We'll Get Someone Who Can."
Faculty Sponsor: Heather Easterling
- 18C Michael Gray. "Pedagogy of the Oppressor: Henry V Language Cultural Invasion and Divide and Rule."
Faculty Sponsor: Heather Easterling

Session 19 10:30 – 11:45 a.m. Room 303 Weyerhaeuser

Faculty Moderator: Donna Pierce

- 19A Cullen Grow. "Characteristics of Very Round Numbers and Smooth Numbers."
Faculty Sponsor: Donna Pierce
- 19B Jamie Haddock. "Probabilistic Part-of-Speech Tagger."
Faculty Sponsor: Paul DePalma

Session 20 10:30 – 11:45 a.m. Room 304 Weyerhaeuser

Faculty Moderator: Vikas Gumbhir

- 20A Angela Hartley. "Argentina and Chile: Gender Empowerment Compared."
Faculty Sponsor: John Yoder
- 20B Amanda Ramey. "Women and Combat: Examining the Constitutionality of Preventing Women from Combat Roles Based on the Premise of Gender."

- Faculty Sponsor: Julia Stronks
- 20C Diana Mallon. “¿Te Queremos Proteger? Sexual Violence and Community Responses in Northern Chile.”
- Faculty Sponsor: Jane Rinehart
- 20D Skye Miner. “The Gendered Politics of Gardasil: How Newsprint Media Reinforces The Gender Binary.”
- Faculty Sponsor: Vikas Gumbhir

Session 21 10:30 – 11:45 a.m. Room 305 Weyerhaeuser

Special Session. *The Christian Transformation of the Classical Heritage*

Faculty Moderator: Richard Goodrich

- 21A Sydney Taylor. “The Christianization of a Roman Virtue”
Faculty Sponsor: Richard Goodrich
- 21B Corinne Ankenbruck-Keogh. “The Creation of the Christian Sibyl.”
Faculty Sponsor: Richard Goodrich
- 21C Antone Pierucci. “Artistic Rendering and Divine Attribute: Depictions of Jesus' Staff in Fourth Century Christian Relief Sculpture.”
Faculty Sponsor: Richard Goodrich

Session 22 10:30 – 11:45 a.m. Room 106 Dixon

Special Session. *Southern Writers*

Faculty Moderator: Laura Bloxham

- 22A Sarah Glady. “The Price of Salvation.”
Faculty Sponsor: Laura Bloxham
- 22B Aubrey Cain. “‘Self-Inflicted Lobotomy’: Identity and the Past in *All The King’s Men*”
Faculty Sponsor: Laura Bloxham
- 22C Lesley Richter. “‘Pour O pour that parting soul in song’: Exploring the Condensation of Jean Toomer’s “Song of the Son” in *Cane*.”
Faculty Sponsor: Laura Bloxham
- 22D Karen Robison. “The Voice of Caddy Compson through Faulkner’s Style and Structure.”
Faculty Sponsor: Laura Bloxham

Session 23 10:30 – 11:45 a.m. Room 111 Weyerhaeuser

Morning Poster Session

- 23A Emily Dossey and Kimberly Dix. “The Effects of Modeling a Token Economy and Self-Recording on the On-Task Behavior of a 3rd Grade Student Diagnosed with an Intellectual Disability.”
Faculty Sponsor: Betty Williams
- 23B Jessica Mangundayao and Christine Clenin. “The Effects of Direct Instruction Flashcard Procedure on the Mastery of Sight Words and Letters by Two Elementary School Special Education Students.”
Faculty Sponsor: Randy L. Williams
- 23C Mika Aoyama and Stefoni Olmstead. “The Effect of the Math Racetrack and Model/Lead/Test Procedures on Counting Skills of Two Students with Disabilities.”
Faculty Sponsor: Randy L. Williams
- 23D Ethan Smith. “Influence of Substrate Types and Environmental Manipulations on the Burrowing Ability of *Venerupis philippinarum* as Studied on San Juan Island.”
Faculty Sponsor: Craig Tsuchida

- 23E Emily Campbell. "Sheltering Behaviors of Two Small Intertidal Species of Crab *Hemigrapsus nudus* and *Hemigrapsus Oregonensis* as studied on San Juan Island."
Faculty Sponsor: Craig Tsuchida
- 23F Cary Frick. "The Effect of Light Darkness and Water Flow on the Rate of Displacement of the Common Purple Sea Star *Pisaster ochraceus*."
Faculty Sponsor: Craig Tsuchida
- 23G Kayla Strahm. "The Effect of Water Temperature on the Velocity and Mobility of Marine Hermit Crabs."
Faculty Sponsor: Craig Tsuchida
- 23H James Fronk. "Comparison of Measured Ammonia Secretion Levels between *Pisaster ochraceus*, *Stichopus californicus*, *Cancer antennarius* and *Pandalus danae* as Studied on San Juan Island."
Faculty Sponsor: Craig Tsuchida
- 23I Chelsea Barberio-Kitts. "Effects of Direct Instruction Flashcard and Reading Racetrack Procedures on Core Word Mastery by a Child with Autism."
Faculty Sponsor: Randy L. Williams
- 23J Arlana Byers. "Investigation of Alcohol Use in an Individual Using a Breathalyzer EtG (Ethyl-glucuronide) and Self-Report."
Faculty Sponsor: Donelle Howell
- 23K Wade Muncey and Trent Millin. "The Effects of Blood Glucose on Memory Recall."
Faculty Sponsor: Michael Sardinia
- 23L Jonathan Smith and Dieu Huynh. "Genetic Introgression of *Cyprinidaes* in Spokane area tributaries."
Faculty Sponsors: Randall James and Steve Fisk
- 23M Luke Meininger. "Habitat Preference of *Pisaster ochraceus* due to differing light levels."
Faculty Sponsor: Craig Tsuchida
- 23N Christopher Colvin. "Using Differential Scanning Calorimetry to Find Phase Diagrams for Organic Solvents."
Faculty Sponsor: Karen Stevens
- 23O Ace Taylor. "Moving from Access and the OLEDB Connector to MySQL and the DbLinq Connector."
Faculty Sponsor: Susan Mabry
- 23P Ben Hamming and Marc Rollins. "Low-Thrust Trajectory Optimization for Near Earth Asteroid Rendezvous Missions Using Plasma Propulsion Systems."
Faculty Sponsor: Kamesh Sankaran
- 23Q Sarah Flynn and Heidi Renstrom. "The Effects of a Modeling and a Prompting Intervention on a 3rd- Grade Student's Reading Accuracy Fluency and Expression in an After-School Tutorial Center."
Faculty Sponsor : Betty Williams
- 23R Carlee Snider. "Field study of heavy metal contaminants in the hepatopancreas of *Lymnaea stagnalis wasatchensis* snails."
Faculty Sponsor: John Shea
- 23S Michael Weidemann. "Creating a Framework to Fight Celiac Disease with Varied Machine Learning Techniques by Combining Desired Protein Traits."
Faculty Sponsor: Kent Jones
- 23T Andrea Ansari. "Quenching of the Manganese-catalyzed Bromate-Ethylacetoacetate Oscillating Reaction Using Various Salt Solutions."
Faculty Sponsor: Karen Stevens

- 23U Taylor Willi. "Lithium Quenching Experiments and Phase Space Analysis for the Oscillating Briggs-Rauscher Reaction."
Faculty Sponsor: Karen Stevens
- 23V Jacob McCallum. "Quenching the Oscillating Manganese-catalyzed Bromate-Citric Acid Reaction."
Faculty Sponsor: Karen Stevens
- 23W Tyler Dennis, Nicole Hamlin and Dina Storozhenko. "Analyses of Alu recombination rate in *Homo sapiens*."
Faculty Sponsors: Randall James and Steve Fisk
- 23X Zachary Groom. "Bacterial Genome of *Rhodopirellula baltica* in the *Pacifastacus leniusculus* Crayfish."
Faculty Sponsor: Steve Fisk
- 23Y Christopher Frick and Rebecca Johnson. "Purification of R Body Proteins RebA, RebB, RebC, and RebD for Structural Studies."
Faculty Sponsor: Deanna Dahlke Ojennus

Keynote Address 12:30 – 1:15 p.m. HUB Multi-Purpose Room

Andrea Palpant Dille. "Images Make Arguments: Inside the Ethics, Mechanics, and Research Methods of Documentary Filmmaking."

Session 24 1:30 – 2:45 p.m. Room 203 Weyerhaeuser

Faculty Moderator: Corliss Slack

- 24A Chelsea Chamberlain. "Media and the Haywood Trial."
Faculty Sponsor: Corliss Slack
- 24B Taylor Warren. "Vikings on the Bosphorus: Byzantine-Varangian Relations in the Early Middle Ages."
Faculty Sponsor: Corliss Slack
- 24C Michael Schultz. "The Traditio of Psalm 50: A Mushite Cult Prophet and A Deuteronomic Hand"
Faculty Sponsor: Scott Starbuck

Session 25 1:30 – 2:45 p.m. Room 204 Weyerhaeuser

Special Session. *Women and Children Last in Victorian Fiction*

Faculty Moderator: Pamela Corpron Parker

- 25A Aubrey Cain. "Throwing the Baby Out with the Bathwater: Infanticide in Victorian Literature."
Faculty Sponsor: Pamela Corpron Parker
- 25B Caitlin Wheeler. "Children and the Future of Victorian England"
Faculty Sponsor: Pamela Corpron Parker
- 25C Teresa Norlin. "Abandon the Young: Exploring the Tie between Public and Familial Injustice in Charles Dickens' *Bleak House*."
Faculty Sponsor: Pamela Corpron Parker
- 25D Ben Everett. "Emily Bronte's *Wuthering Heights* and the Victorian Wife's Crisis of Identity."
Faculty Sponsor: Pamela Corpron Parker

Session 26 1:30 – 2:45 p.m. Room 205 Weyerhaeuser

Faculty Moderator: Daniel Bubb

- 26A Jessica Valencia. "The High Life."
Faculty Sponsor: Jim McPherson
- 26B Taylor Zajicek. "The Rhetorical Presidency of Theodore Roosevelt: Imperialism Framed as Duty."

Faculty Sponsor: Andrew Hogue
26C Kyle Novak. "Pseudo-Democracy: A Hypocritical Education."
Faculty Sponsor: Dale Soden

Session 27 1:30 – 2:45 p.m. Room 303 Weyerhaeuser

Special Session. Media Production and Liberal Arts Education

Faculty Moderator: Fred Johnson

27A Morgan Feddes, Ryan Graves and Kyle Kim. Short Film Screenings Followed by Discussion.
Faculty Sponsor: Fred Johnson

Session 28 1:30 – 2:45 p.m. Room 304 Weyerhaeuser

Faculty Moderator: Anna Marie Medina

28A Mary Ann Mediba Ziegler. "Familial Relationships Effects on College Risk Taking Behaviors."
Faculty Sponsor: Anna Marie Medina

28B Kathryn Bradshaw. "Temporal Orientation Mood and Gender."
Faculty Sponsor: Anna Marie Medina

28C Luke Nofsinger and Molly Ezell. "Emotions and Cognitive Processing."
Faculty Sponsor: Anna Marie Medina

28D Makenzie O'Neil and Stephanie Wraith. "Goal Priming Versus Mental Contrasting."
Faculty Sponsor: Anna Marie Medina

Session 29 1:30 – 2:45 p.m. Room 305 Weyerhaeuser

Faculty Moderator: Patricia Bruininks

29A Julia Barnes. "Cross-modal Recognition in Roosters (*Gallus gallus*)."
Faculty Sponsor: Jennifer Clark and K-Lynn Smith

29B Chelsea Stone. "Manipulating Brain Electrical Activity during Sleep to Understand Brain Metabolism."
Faculty Sponsor: Jonathon Wisor

29C Diana David, Amanda Dawson, and Emily Feczko. "Task Switching and Creative Problem Solving."
Faculty Sponsor: Gary Thorne

29D Tara Stefanoff. "Interpretive Drawing and Reading Comprehension."
Faculty Sponsor: Kathryn Picanco

Session 30 1:30 – 2:45 p.m. Room 204 Dixon

Faculty Moderator: Michael Treleaven

30A Katharine Staudinger. "Barriers to Mental Healthcare: An Analysis of the US Military and PTSD."
Faculty Sponsor: John Yoder

30B Katie Williams. "Robin Hood and the Monopoly Man."
Faculty Sponsor: John Yoder

30C Chelsey Wheeler. "The Humanitarian Influence: Humanitarian NGOs Humanitarian Intervention and Humanitarian Consequences. Can Humanitarian NGOs Encourage States to Intervene? Do They Help or Hurt Local Communities?"
Faculty Sponsor: Michael Treleaven

30D Danielle Tackoor. "Living in a Second Gilded Age."
Faculty Sponsor: Daniel Bubb

Session 31 1:30 – 2:45 p.m. Room 206 Dixon

Special Session. From Bees to Buffalo: A Journey into the DNA/Genome Studies

Faculty Moderator: Steve Fisk

- 31A Forrest Ireland, Lifen Guo, and Marina DeFrates. "The Search for the Last Buffalo."
Faculty Sponsor: Steve Fisk and Randall James
- 31B Joseph Lawhead, Nicholas Negretti, Ashley McElroy, and Hailey Markham-Patti. "Development of 16s Bacterial rRNA Sequence Library for *Apis Mellifera*."
Faculty Sponsor: Steve Fisk and Randall James
- 31C Andrew Wordell and Celena Ward. "SNP Haplotype Analysis for the Identification of *Entamoeba gingivalis*."
Faculty Sponsor: Randall James
- 31D Jacob Ecklund, Hannah Roberts, and Alyssa Barton. "An Analysis of Gene Flow within Eastern Washington Mule Deer Using SNP Haplotyping."
Faculty Sponsor: Randall James

Session 32 1:30 – 2:45 p.m. Room 111 Weyerhaeuser

Afternoon Poster Session

- 32A Cory Sago. "Relationship Between 40 Yard Sprint Times and Vertical & Broad Jumps among Trained College-Age Athletes."
Faculty Sponsor: Matt Silvers
- 32B Kayte Holm, Jordon Hoffnagle and Hannah Hill. "The Effects of Hippotherapy on Children Diagnosed with Cerebral Palsy."
Faculty Sponsor: Mike Sardinia
- 32C Zennetta Mann. "The Effects of Direct Instruction Flashcards and Strategies on the Ability to Learn and Retain Multiplication Facts."
Faculty Sponsor: Thomas McLaughlin
- 32D Alex Hymel, Tae-Hun Lee, Brant Woodruff and Stacey Kobes. "Identification and Cloning of PEPX genes in *Lactobacilli*."
Faculty Sponsor: Deanna Dahlke Ojennus
- 32E Haley Krueger. "Personality Traits and Emotional States in the Social Setting."
Faculty Sponsor: Noel Wescombe
- 32F Paul Steenman. "Trematode Diversity as an Indicator of Ecosystem Health in the Inland Northwest."
Faculty Sponsor: John Shea
- 32G Frances Peterson. "Language Learning Environments."
Faculty Sponsor: James Hunter
- 32H Kathleen Nollenberger. "Communication Strategies: Co-created Strategies that Address Cultural Mismatch for Communication between Native and Non-native Speakers of English."
Faculty Sponsor: James Hunter
- 32I Delsey Olds. "Substrate preferences of *Palaemon macrodactylus* as studied on San Juan Island."
Faculty Sponsor: Craig Tsuchida
- 32J Lennon Von Weller, Kirsten Kelly and Marsetta Flumo. "*Probiotics: A Comparative Analysis*."
Faculty Sponsor: Erin Griffin
- 32K Derick Syhlman. "Antimicrobial Properties of Probiotic Microbes."
Faculty Sponsor: Erin Griffin
- 32L Matthew Magill. "The Perceptions of Character Traits Based on Gender and Behavior."
Faculty Sponsor: Patricia Bruininks
- 32M Erin Dickson. "Knockout of a putative methyltransferase gene in *Rhodospirillum rubrum* and its effect on rhodoquinone biosynthesis."
Faculty Sponsor: Jennifer Shepherd

- 32N Luke Meininger and Kittrick Kane. "The effects of caffeine and quercetin in energy drinks on blood pressure and heart rate."
Faculty Sponsor: Michael Sardinia
- 32O Justin Harrer. "The Effects of Geothermal Activity on Intertidal Biodiversity within the Northern Gulf of Mexico."
Faculty Sponsor: Methea Sapp
- 32P Heidi Dole. "L1 in the L2 classrooms: Impacts and Perceptions."
Faculty Sponsor - James Hunter
- 32Q Allison Low. "Examination of chimpanzee tool-use."
Faculty Sponsor: Mark Bodamer
- 32R Alexis Holder, Riley Benoit, Tara Togstad and Graciela Tobar. "Isolation of the Novel Bacteriophage Skipper ROXX Pokie & Gumbie."
Faculty Sponsor: Marianne Poxleitner and Kirk Anders
- 32S Monica Schroll, Cayla Boisseranc, Francis Green and Susanne Lacour. "Isolation of Novel Mycobacteriophages Parish Bart Boatsnbros and Sherri5110."
Faculty Sponsors: Kirk Anders and Marianne Poxleitner
- 32T Taylor Oswald, Kevin Johnston and Mary McAleer. "Plaque Facts: The Phenotypic Expression of Mycobacteriophage and their Visible Lysis."
Faculty Sponsor: Marianne Poxleitner and Kirk Anders
- 32U Sam Gordon, John Culver and Joe Ryan. "Mycobacteriophage Gumbie an addition to genetic diversity in the F1 cluster."
Faculty Sponsor: Marianne Poxleitner and Kirk Anders
- 32V Benjamin Giles. "Increasing Code Security and Assisting Testing through Static Analysis and Code Instrumentation."
Faculty Sponsor: Peter Tucker
- 32W Cory Druffel and Kara Fisher. "The Effects of a Visual Boundary and Contingent Reward System on the On-Task Behavior of a Preschool Student with Developmental Delays."
Faculty Sponsor: Betty Williams
- 32X Julianne Smith. "Phase Diagrams of Binary Benzoic Acid Derivative Mixtures by Differential Scanning Calorimetry."
Faculty Sponsor: Karen Stevens
- 32Y Sydney Schneider. "Synthesis Characterization and Investigation of Neuropeptides with Antimicrobial Activities."
Faculty Sponsor: Matthew Cremeens

Session 33 3:00 – 3:50 p.m. Room 203 Weyerhaeuser

Faculty Moderator: Daniel Bubb

- 33A Andrew Hamstra. "Return To Play Protocol For An Athlete Sustaining Multiple Concussions Within a Season: A Case Report of a Collegiate Football Player."
Faculty Sponsor: Todd Sandberg
- 33B Sean Newton and Brady Jensen. "The Bowl Championship Series and Anti-Trust: Does it Break the Law?"
Faculty Sponsor: Roger Park

Session 34 3:00 – 3:50 p.m. Room 204 Weyerhaeuser

Special Session. *The Economics of Taxes and Alcohol Consumption*

Faculty Moderator: Erica Johnson

- 34A John Scott. "Economics of Alcohol Consumption."

- Faculty Sponsor: Erica Johnson
34B Brandon Reeves. "Measuring the Effects of Income Taxes on the Labor Force and Government Tax Revenue."
Faculty Sponsor: Erica Johnson

Session 35 3:00 – 3:50 p.m. Room 205 Weyerhaeuser

Faculty Moderator: Brad Sago

- 35A Madelyn Hayes. "The Influence of Social Media on Music Choices and Preferences With Population Members Ages 18 to 24."
Faculty Sponsor: Brad Sago
35B Megan Fraser. "How Background Music Affects Television Advertisement Retention Among College Students."
Faculty Sponsor: Brad Sago

Session 36 3:00 – 3:50 p.m. Room 303 Weyerhaeuser

Faculty Moderator: Michael Treleaven

- 36A J.W. Trull. "A New Ecological Narrative: Nature, Place, and Capitalism in the Pacific Northwest."
Faculty Sponsor: Michael Treleaven
36B Shane Fouts. "Ecology in Japan and China Past and Present."
Faculty Sponsor: John Yoder

Session 37 3:00 – 3:50 p.m. Room 304 Weyerhaeuser

Faculty Moderator: Bob Clark

- 37A Ben Snarski. "Don't You Know Who I Am?! ; Invulnerability and Deviance at an Elite Private Institution"
Faculty Sponsor: Vikas Gumbhir
37B Sarah Brooks Brady. "Sizing up the Battle: Public Defenders and Prosecutors in the Adversarial System."
Faculty Sponsor: Vikas Gumbhir

Session 38 3:00 – 3:50 p.m. Room 107 Weyerhaeuser (Robinson Teaching Theatre)

Faculty Moderator: Diana Trotter

- 38A Rebecca Dodge, Sarah Sagarang, and Katie Fergus. "Gravity" (Performance and Discussion)
Faculty Sponsor: Diana Trotter
38B Alyssa Hickert. "Caryl Churchill and Second-Wave Feminism in *Top Girls*."
Faculty Sponsor: Beth Cooley

Session 39 3:00 – 3:50 p.m. Room 204 Dixon

Faculty Moderator: Leslie Norman

- 39A Chris Dorn. "The Harlem Renaissance and La Negritude: Antithesis and Synthesis."
Faculty Sponsor: Bendi Benson Schrambach
39B Natalie Douglas. "Barefoot at Dawn: Albert Samain and French Symbolist Poetry."
Faculty Sponsor: Bendi Benson Schrambach

Session 40 3:00 – 3:50 p.m. Room 206 Dixon

Faculty Moderator: James Hunter

- 40A Debi Drake. "Action Research in ESL: IELTS Listening."
Faculty Sponsor: James Hunter

40B Kevin Kato. "World Englishes and the Non-Native/Native Speaker Dichotomy."
Faculty Sponsor: James Hunter

Session 41 4:00 – 5:30 p.m. Room 107 Weyerhaeuser (Robinson Teaching Theatre)

Andrea Palpant Dilley. Screening of "In Time of War" followed by panel discussion.
Faculty Moderator: Fred Johnson

List of Abstracts

- 1A Elizabeth Hughes. "Hit it and Quit it: The Relationship Between Self-Esteem, Alcohol Use, and Hooking Up Amongst College Students."
The combination of casual sex and alcohol use is a common occurrence amongst college students. However the term hooking up has recently exploded onto campuses which can be loosely described as a range of sexual conduct outside a publicly acknowledged romantic relationship. Alcohol is often cited as a factor that facilitates hooking up insofar as it lowers inhibition. However another factor might influence hooking up - self-esteem. My project will research the relationship between self-esteem hooking up and alcohol use. I present two hypotheses: a) Females with low self-esteem will be more likely to hook up than females with high self-esteem. b) Conversely males with high self-esteem will be more likely to hook up than males with low self-esteem. An internet-administered survey will be distributed to a probability sample of undergraduate students at an Inland University and will include Rosenberg's self-esteem scale.
Faculty Sponsor: Vikas Gumbhir
- 1B Samantha Agopsowicz. "Suburban Gangsters: Hip-Hop Consumption and Delinquency at an Elite Private University."
Starting in the poverty-riddled streets of the Bronx in the late 1970's hip-hop music and culture has slowly but surely transformed the American cultural landscape. What was once a style confined to inner-city African-American and Latino youth now dominates the mainstream from music to fashion and everywhere in between. Many sociological studies have focused on finding a link between poor underprivileged African-American high school students and deviance. These results have been inconclusive. My study focused on the largest consumers of hip hop music: young Caucasian males. I hypothesized that there would be a correlation between undergraduate students who consume copious amounts of hip-hop or rap music and deviant behavior. My results supported this hypothesis by showing statistically significant correlations between those who are heavy users of hip hop or rap music and the self-reported deviant acts they committed.
Faculty Sponsor: Vikas Gumbhir
- 1C Krista Van Dyke. "Unstalling the Revolution? College Students' Attitudes Opinions and Expectations of Career Marriage and Family Life."
The age group that I am studying (approximately 18-22 years old) observed their parents generation in the midst of what Arlie Hochschild termed the "Stalled Revolution" where women had entered the workforce but men had not yet re-entered the home. I am interested in how watching their parents navigate this phenomenon affected individuals currently in college and how they plan and expect to deal with the division of work and family responsibilities in the future. This study will examine the influences on college students' beliefs and expectations

regarding careers marriage and family life. I will gather data through an internet-administered probability sample survey of undergraduates at a private Catholic university in the Inland Northwest. I will use multivariate analysis to explore how these independent variables come together to shape students' conceptions of their future families and careers.

Faculty Sponsor: Vikas Gumbhir

Special Session 2. *New Readings of the Canterbury Tales and Middle English Literature*

This session brings together 4 different papers that bring together readings of Chaucer's Canterbury Tales and other important Middle English Texts. Read in their historical context these readings bring new light to Chaucer and his age.

Faculty Moderator: Melissa Sprengle

2A Natalie Segó. "Chaucer and Middle English Literature."

This presentation will discover the influence of a literate reading class in the freedom authors felt to express indictment of the church. Written in the Medieval Era Chaucer's *The Canterbury Tales* presents an example of a work attempting to indict the church but requiring retractions and disguise due to the readership which was predominantly upper class and which created a system of censorship as related to the church. The middle class became more literate which allowed works such as *A Gest of Robin Hood* and *The N-Town Plays* to be less the voice of the nobility and more the voice of the people. As representatives of their contemporary culture their writings become a focal point in understanding the feeling of the era. These works give modern readers the ability to gain insight into the medieval world. Without them the Medieval Era would be a much darker place historically.

Faculty Sponsor: Doug Sugano

2B Paula Gutierrez-Neal. "Subjugating the Wyf: The Articulated Aristocratic Privilege of Raptus in Middle English Literature and Culture."

Raptus shifted into a more ambiguous theft-oriented definition by the fourteenth century; the patriarchal system and the concept of the female body as the receiver of violence to secure male power lend themselves to the use of raptus as a tool of aristocratic men to maintain traditional roles when women gained too much sexual power. This trend is depicted even in the *Wife of Bath* the piece traditionally viewed as proto-feminist. In addition the pattern is upheld by Chaucer's "*The Merchants Tale*", *Ywain and Gawain*, and Chaucer's "*The Knight's Tale*". Despite the feminist lens applied to the *Wyf's* prologue and tale the *Wyf's* is disempowered through her own tale via her conflation with the *Loathly Lady* as well as with the raped maiden (and the latter two with each other). Therefore although there the desire for a feminist reading persists the *Wyf* supports the system of male privilege in raptus.

Faculty Sponsor: Doug Sugano

2C Caitlin Wheeler. "In the Name of the Mother and the Son and the Holy Spirit: Female Imagery in Medieval Religious Literature."

My essay investigates the paradox of the contradicting portrayals of the female nature in medieval literature and expectations using contemporary historical developments to help illuminate literary ideas.

Faculty Sponsor: Doug Sugano

2D Lesley Richter. "'Because that no frute of us doth procede': Exploring the Role of Children in Medieval Literature."

As Osborn Bokenham revealed in his Medieval piece "The Life of Saint Anne" children are an undeniable gift from God. It seems they are such a gift that a woman without child is not only to be ostracized but is ultimately cursed. Barren women are found throughout Medieval literature but often represent a woman who has fallen out of the graces of God and should be maltreated within their societies. For example Chaucer portrays his Wyf of Bath to be the anti-woman she embodies everything loathsome in the female gender she coincidentally does not rear children suggesting there is a profound error in her character. The question then becomes why? In my presentation I will reveal how the role of the Catholic Church as well as 13th century phenomenon known as "The Cult of the Virgin Mary" influenced the status of women. I will also reveal how women without children worked within their constricting societies to form a new identity for themselves.

Faculty Sponsor: Doug Sugano

3A Corey Dugan. "Gypsies in Spain Friend or Foe?"

As the population of gypsies in Spain continues to grow a consideration of their current situation in light of their history since Spain's movement to democracy in 1978 is becoming more and more relevant. This paper seeks to analyze the direction in which treatment of gypsies has evolved over the years using interviews with Spanish citizens newspaper articles radio broadcasts and scholarly articles. Unfortunately the evidence shows that while there have been some programs and institutions put in place to improve the gypsies' situation many efforts fail to take into account cultural differences and are thus ineffective in their implementation. The Spanish people and government must learn to address the gypsies within the context of their culture in order for them to have an equal place in society.

Faculty Sponsor: John Yoder

3B Kyle Stevenson. "Independence Dearly Fought For: The Finnish Decision to Fight the Soviet Union."

This clash pitting a small and isolated Finland against the might of the Soviet Union is a fascinating part of World War II. Seeking territorial expansion the Soviet Union presented Finland with a series of ultimatums hoping to avoid conflict. Finland rejected Soviet overtures; a Soviet-managed border incident would be used as a casus belli for the Soviet invasion. Hopelessly outnumbered and outgunned the Finns would hold out against superior forces for months. It seems counterintuitive that a nation would willingly fight a war that they cannot truly expect to win. Through a historiographical review of English-language sources reasons for why the Finns refused Soviet demands will be offered. Additionally this paper will analyze the Finnish decision noting how Finland was able to maintain a level of independence from the Soviet Union unrivaled by any Baltic State during the Cold War as well as the fact that Finland was able to outlast its expansionist neighbor to the southeast.

Faculty Sponsor: Michael Treleaven

3C Katie Seevers. "The Changing Zionist Narrative: Analyzing Online Diaries as a Way to Gauge Israeli Opinion."

This paper examines the evolution of Israeli attitudes towards Palestinians. Over the course of Israeli history there have been three separate narratives regarding questions of Palestine's legitimacy and the rights of Palestinians. The original and official government narrative which dominated from the 1940s through the 1980s was that of Zionism. During the 1980s through mid 1990s young people and intellectuals challenged that story with a narrative more sympathetic to the Palestinians and less confident about the legitimacy of Israeli occupation of

the land. More recently many Israeli's have adopted a Neo-Zionist narrative which is largely a return to the originally held Zionist perspective. My paper examines and analyzes blogs of people living in Israel to document and explain these changes.

Faculty Sponsor: John Yoder

Special Session 4. *Models in Mathematical Biology*

Biology, like other areas of science, is quickly becoming a quantitative and interdisciplinary field. Several new sub-fields have emerged including biophysics, bioinformatics, computational genomics, and computational neuroscience. Researchers in these areas make use of the analytic power of mathematics and computers to not only interpret existing data, but also to formulate hypotheses about mechanisms at work in complex biological systems. This session will present several mathematical models of biological networks, including sleep and the dynamics of a predator-prey system. Faculty Moderator: Michael Rempe

4A Annie Didier. "Extended Two-Process Model of the Human Sleep-Wake Cycle to Include the Effects of Caffeine Consumption."

The two process model is a mathematical model of the human sleep-wake cycle based on interactions between the circadian rhythm and sleep propensity homeostat. We extend the two-process model to include alterations to the sleep-wake cycle caused by caffeine consumption. In this model caffeine directly alters the magnitude of the homeostat at the time of consumption. We use the model to compare sleep onset latency sleep duration and recovery time after caffeine intake to the normal non-caffeine case. We examine the effects of a 100 mg dose of caffeine consumed at various times during the day and the effects of different sized doses taken at the same time of day.

Faculty Sponsor: Michael Rempe

4B Branden Lowe. "The Introduction of Goldfish into a Trout Populated Lake."

Often in popular fishing lakes foreign fish are brought into an ecosystem by irresponsible fisherman. For instance in southern California they may use goldfish, *Carassius auratus*, as bait to catch rainbow trout, *Oncorhynchus mykiss*. Since goldfish are not native to that area introducing them into a lake can have a catastrophic impact on the trout population. Trout do not protect their young and goldfish eat trout eggs which significantly reduces the trout population. We present a mathematical model consisting of three continuous differential equations that emulate the relationships between trout and goldfish populations. Understanding the dynamics of this system will help us understand the extent to which goldfish affect the trout population and it will raise awareness of the effects of introducing foreign fish into an ecosystem.

Faculty Sponsor: Michael Rempe

4C Mark Franklin. "Using a Mathematical Model to Analyze the Dynamics of the REM and NREM Sleep Cycle."

Recent research suggests that sleep and particularly REM sleep is important for learning new associations and creative problem solving. For instance it has been shown that a "REM nap" (a nap consisting primarily of REM sleep) is very effective in improving creativity. However the basic mechanisms that govern REM/NREM sleep dynamics particularly during a nap are not well understood. We use a published mathematical model of the sleep-wake cycle to investigate the mechanisms of REM sleep. We analyze the effects of naps sleep deprivation and caffeine on the dynamics of the REM-NREM cycle. Using a model helps us to understand how the neuronal

components of sleep interact with each other to bring about healthy REM-NREM behavior and may give insight into what is going wrong in certain sleep disorders.

Faculty Sponsor: Michael Rempe

- 5A Tae-Hun Lee. "The History of the Popular Korean Democratic Movement in the Latter Half of the Twentieth Century."
Through a 40 page on-site archival research paper I holistically examined the history of the Korean Democratic Movement in the latter half of the twentieth century. Korea has been ruled by military dictators from the rule of Seung-man Rhee (r. 1948-1960) until the election of Roh Tae-Woo (r. 1988-1993). During this time there were many organizations that led the movement for democratic rule. A strong example of their work is the Kwangju Democracy Movement (1980) during which Kwangju Republic of Korea rose as a city against the dictatorship in a pro democracy rally. I researched and wrote about a movement for democracy that brought true popular sovereignty to South Korea. In a time when movements for democracy is spreading around the globe (i.e. Egypt Bahrain and Tunisia) I believe that public education on a movement that succeed in creating a stable and full democracy is not only beneficial but necessary.
Faculty Sponsor: Corliss Slack
- 5B Katelin Knox. "Analysis of the World Palm Oil Market."
The world palm oil market production and demand is expanding at unprecedented rates along with a historical trend of increasing real prices. The purpose of this paper is to explain the reasons for the increase in production demand and price simultaneously at historically sustainable levels. After providing background information on the characteristics of palm oil and the influence of GATT Uruguay Round on the expansion of the market this paper analyzes the current market situation. Upon reflection of the market composition and factors creating the market structure the increase in production demand and price are explained. This paper concludes with some controversial aspects associated with the expansion of the palm oil market and the challenges those controversies pose.
Faculty Sponsor: Richard Schatz
- 5C Sarah Marken. "Mental Models: Affecting Change and Shaping or Reshaping East Africa for the Future."
The realities of poverty distrust and uncertainty in the future plague the developing world. Theorists try to identify solutions in spite of the various nuances that keep individuals and societies in a position of unhealthy stagnation or regression. Many of these solutions can create stumbling blocks or leave gaps in solving the deeper problems. The betterment of education medical care social programs or the government will take hold only if individuals and societies are able to recognize the need for certain change and engage in the process. This requires shifting the mental models that provide meaning for life. To illustrate this theory I will define the concept of mental models and examine the benefits of researching and utilizing techniques of change with them. To link the theory with real world circumstances I will examine how East Africa's history has shaped its people's mental models and their current responses to change.
Faculty Sponsor: Craig Hinnenkamp
- 6A Amanda Burnett. "The Effects of Cause-Based Marketing on Perception of Brand Equity."
Cause-based marketing occurs when a for-profit company gives part of their revenue to a not-for-profit organization. IEG a company who specializes in partnering companies with entertainment events and charities stated that North American companies spent \$1.55 billion

on cause-based marketing in 2009 alone. It is important for companies to understand the effect of this marketing on the consumers' perception of brand equity so that they can utilize the most effective marketing strategies. Traditional college-age students ages 18-23 will be the focus of this study because they are typically viewed as being very cause-oriented. This research will be administered by survey and will test the subjects' perception of various brands before and after viewing print advertisements showing the brands utilizing cause-based marketing. This research will help companies determine how productive cause-based marketing is and which marketing strategies will be the most effective.

Faculty Sponsor: Brad Sago

6B Jocelyn Swalm. "The Effectiveness of Business Advertising on Facebook and Twitter to College Students."

A marketing tactic businesses utilize is to advertising daily deals and specials via social mediums. This comes in a variety of methods such as discounts coupons or secret words of the day resulting in attempts to entice purchases. This research examined the effectiveness of this method in changing the behavior of college students. Does this approach increase visits to traditional brick and mortar stores and purchases of college students? If potential customers are currently unaffected by the messages what would change their behavior in the future? Data was collected through a questionnaire that was administered on college campuses. This information could assist companies understand the effectiveness of their social media marketing on an important consumer segment. It can also show how the company could do a better job on their social media marketing tactics. The target market for this research was traditional college aged students (ages 18-24).

Faculty Sponsor: Brad Sago

6C Andreas Samus. "The Implications of Prevailing Brand Images of Western Products on the Branding Strategies of US Food Companies in the Malaysian Market."

US companies recognize Southeast Asia as a growing market for their products. Also Southeast Asian consumers aged 18 to 30 are a very profitable market since they will experience higher incomes and are more open to Western brands. Although the brand images of Western food products are generally strong many consumers buy products from smaller local manufacturers. In order to succeed US companies have to adjust their marketing strategy to local brand preferences such as the prevailing brand images of Western products. This research examined the brand images of major US food companies in Malaysia and revealed the strength of attributes that are important in the consumer decision making process. This research was conducted in Malaysia where Western food manufacturers already have a strong presence in the market. Hence the findings of this research will assist US food companies in adjusting their marketing strategy to be successful in Southeast Asia.

Faculty Sponsor: Brad Sago

6D Ariella Chi. "How Lesser-Known Smaller Liberal Arts Institutions of Higher Education Can Attract and Retain International Students on a Traditional Undergraduate Track."

Large American universities benefit from their reputation and widespread brand recognition when recruiting international students. Regionally-known smaller liberal arts universities however generally do not benefit from brand awareness and usually find it more difficult to attract and retain international students seeking a traditional 4-year undergraduate degree. The goal of this research was to find effective ways liberal arts colleges could attract and retain international students based on surveys conducted with international students ages 18 to 25

currently attending a liberal arts university. The study examined the variables involved in the attraction and enrollment of the students and the reasons why they chose to remain at the university. The results determined how lesser-known smaller liberal arts institutions could successfully design recruiting and promotional campaigns to attract more undergraduate international students who would graduate from their universities.

Faculty Sponsor: Brad Sago

- 7A Jack Dunbar. "The Effect of Varying Levels of O₂ Exposure on the Concentration of Fecal Coliforms in Compost Piles Comprised of Biosolid Waste."
- Studies on comparative composting have suggested a correlation between aeration level and core temperature within a compost pile. One study done by Fernandes and Sartaj examined the core temperature within three different types of compost piles; naturally aerated passively aerated and actively. A naturally aerated compost pile is simply a static pile with no infrastructure to facilitate aeration. Passively and actively aerated compost has an infrastructure to facilitate the flow of air through the pile. The results of the Fernandes and Sartaj experiment indicate that actively filtered aeration generates the most heat and degrades the most compost. In our experiment we examined if this aerated composting method is also more effective in killing fecal coliforms present in compost. We intended to discover the most effective way to kill pathogens in compost and make the compost suitable for governmental standards on environmentally sound compost.

Faculty Sponsor: Frank Caccavo

- 7B Samantha Blake. "Discovering Bacteriophage Buzzy: Isolation and Analysis."
- The study of bacteriophages and their genetic material has become a topic of interest in Biology as there are more phage on Earth than any other organism with many of those identified being linked to a variety of well-known pathogens. Mycobacteriophage Buzzy was discovered on the Gonzaga University campus. Identification and isolation of Buzzy began with an enrichment sample which produced turbid plaques. Upon isolation DNA was extracted and a restriction digest on the genetic material obtained. Electron microscopy was performed and revealed that it is part of the Siphoviridae family. Buzzy has since been uploaded into the SEA phage database and archived for additional research in the future. The primary topic of discussion for this presentation will be the description of the isolation and characterization of Mycobacteriophage Buzzy.

Faculty Sponsor: Marianne Poxleitner and Kirk Anders

- 7C Tara Togstad. "Restriction Digest of the Novel Bacteriophage Gumbie."
- The diversity of bacteriophages led to the hypothesis that we could isolate a novel bacteriophage that infects *Mycobacterium smegmatis*. This phage was isolated from soil and compared to other known phages to determine uniqueness. One way to analyze novelty is to digest phage DNA with various restriction enzymes that cut DNA at a particular sequence of nucleotides. Gel electrophoresis was used to separate DNA fragments by applying an electric current to a gel matrix. Gumbie's DNA was cut with restriction enzymes BamHI ClaI EcoRI HaeIII and HindIII. The band distances were measured and compared to a ladder to determine DNA fragment lengths. I concluded that Gumbie's DNA is unique from other known phage by comparing it to other restriction digests. Because of the clear cutting and abundance of bands Gumbie was chosen to have its genome sequenced for further analysis.

Faculty Sponsor: Marianne Poxleitner and Kirk Anders

- 7D Chelsea Stone and Erinleigh Caughron. "Mycobacteriophage Genome Annotation."
Tremendous diversity exists between Mycobacteriophage. The diversity can be assessed through genome sequencing and comparisons. In this research the bacteriophage GUmbe was isolated from a Spokane soil sample the DNA extracted and sequenced. The computer programs GeneMark and Glimmer were used to auto annotate the genome by determining correct open reading frames and predicted gene location. However gene annotation was verified and completed by hand. Using Apollo a gene annotation program start codons were assessed by examining Shine Delgarno Scores. Coding potential and sequence similarity found through BLAST were also used to hypothesize the location of each gene. From the completely annotated genome of phage GUmbe it was determined not only that Gumbie is a novel phage but also that it has similar genome sequences to other novel phage. The genome of Gumbie can be uploaded to the Mycobacteriophage database and used for further comparative analysis of new novel phage.
Faculty Sponsor: Marianne Poxleitner and Kirk Anders
- 8A Thomas Whitt. "The Effects of Stirring by Self-Generated Vortex Flows on Fertilization Efficiency of Broadcast Spawning Fish."
In the present study a particle-tracking model is used in combination with a vortex flow-field to determine the effect of the mixing and stirring of gametes (egg and sperm) released by adult broadcast spawning fish (e.g. Regal Angelfish Cubera Snapper). Regal Angelfish extrude unfertilized gametes into the surrounding flow as a single couple while simultaneously creating a toroidal vortex with the male's tail that traps their gametes inside the vortex. Cubera Snapper employ several couples to externally spawn inside of a spiral-shaped vortex that is created by several hundred fish from their school. The goal of this study is to quantify the fertilization enhancement of these stirring-dominant external spawning methods compared to purely diffusive spawning cases (with no vortex flow-field). Preliminary model results suggest that these methods of spawning are beneficial to the particular fish species studied here and could represent preferred methods of reproduction for other species.
Faculty Sponsor: Jillian Caldwell
- 8B Jacob DeBorde, Max Magee. "Uniaxial Compressive Strength of Bricks Subject to Different Temperatures."
This paper includes a study on the compressive strength of brick masonry units subject to different temperatures. Eighteen cored brick masonry units were selected from the same lot. One third of the bricks were tested at 107° C one third at room temperature 24° C and the remaining third at a temperature of -75° C. The literature review presents several examples of the compressive strength for bricks subject to freezing and thawing cycles. However this does not apply to bricks kept at a constant warm or cold temperature. Testing procedures for the experiment adhered to ASTM C67. The results showed that the compression strength test yields higher values for the bricks tested at the lowest temperature. The lowest values of compressive strength were observed for the bricks tested at 107° C. This is a preliminary investigation of the compressive strength of bricks subject to different temperatures and is of special interest for masonry construction in harsh environments.
Faculty Sponsor: Sara Ganzerli
- 8C Greg Postlewaite, Sydney Ulliman, and Carl Buher. "The Beehive Kilns of Mica, Washington: A Walkthrough History of Brick Production."

This paper focuses on the production of masonry in a historical context. A landmark brick manufacturing plant is located in Mica WA near the city of Spokane. To this day the plant still utilizes traditional beehive kilns to produce flue line units. The beehive kilns are the only existing examples in the area of how masonry was manufactured in the early 1900s when the first industries appeared. Because these kilns are among the last still standing in the whole United States their site earned the inclusion in the National Registry of Historic Places in 1982. They provide a unique opportunity to research the historical background of a popular construction material. The Mica brick plant is owned by Mutual Materials® the leading manufacturer and distributor of masonry products in the Northwest. Much of the information included in this study comes from the archives of Mutual Materials® integrated with plant visits.
Faculty Sponsor: Sara Ganzerli

- 8D Andrew Matsumoto, Derek Davis, Ryan Mathis, Jessica Monroe and Angela Weiss. "Connection Design for Wood Column Buckling."
The purpose of this research was to demonstrate the behavior of wood columns subject to buckling under different support conditions. Buckling occurs when a column that is long with respect to its cross-sectional area is subject to a compressive load. Using a Material Testing System apparatus 2x1 5ft tall wood columns were tested with three support conditions: fixed-fixed fixed-pinned and pinned-pinned. Attachments were designed and fabricated to model the supports as close as possible to ideal conditions. The pin attachment was developed from testing conducted at Shimane University. The loading values were compared to the calculated Euler buckling loads. Furthermore results were used to calculate experimental k-values. These k-values were compared to k-values from the AISC Steel Construction Manual. The results were in general agreement with the expected ones. Some discrepancies were noted due to variability in material properties and the accuracy of the data acquisition system.
Faculty Sponsor: Sara Ganzerli
- 9A Chez Ratum, Sabrina Topacio, and Marshall Hurson. "Book Embedding With the Genetic Algorithm."
Book embedding is an NP-complete problem in the area of graph-theory. It involves placing a graph into a book a series of half-planes called pages. The vertices are arranged along the spine of the book. Connecting the vertices to each other without overlapping creates a page. The goal is to create a book with minimal pages. We attempt this by using two genetic algorithms: [1] controlling the order in which edges are placed in a book and [2] controlling the order of vertices along the spine. We have generated minimal book embeddings for several graphs with

known lower bounds. Our goal is to create an embedding for a graph whose lower bounds are only conjectured.

Faculty Sponsor: Paul DePalma and Shannon Overbay

- 9B Josiah Donor. "An Application of Genetic Algorithms to Bayesian Belief Network Learning." There are many different competing theories for the best way to construct a Bayesian Belief Network given a dataset. This paper explores an approach based on genetic programming deriving the best network for given data by randomly generating solutions in the form of node orderings and mutating them until the best one is found. The K2 algorithm is then implemented to find the best network given a node ordering. This type of algorithm is efficient for large datasets where causality is not prior knowledge. The paper discusses other advantages and disadvantages of such an approach. It considers the efficiency and effectiveness of the genetic algorithm as compared to other algorithms.
Faculty Sponsor: Susan Mabry

- 9C Nathan TeGrotenhuis. "Evolution of Biologically Inspired Dynamical Learning Systems Using a Hybridization of Direct and Indirect Generative Encodings." This paper demonstrates how a parallelized genetic algorithm that evolves phenotypes using a unique hybrid generative direct/indirect genomic encoding can increase performance over the same algorithm that uses a generative direct genomic encoding. We describe how this hybrid GA allows both directly and indirectly coded genotypes to participate together in the evolutionary process and allows the process to determine the best encoding suited to the problem. We evaluate and compare the performance of this hybrid GA to the same GA with only a generative direct encoding for a variety of learning tasks and demonstrate how for many problems the hybrid GA accelerates the evolutionary process. This paper also demonstrates how a GA can successfully evolve Discrete Dynamical Learning Machines (DDLMs). DDLMs are dynamical machines inspired by biological neurons. Neurons use nonlinear dynamics for information processing and exhibit incredibly varied and complex synaptic input networks.
Faculty Sponsor: Kent Jones

Special Session 10. *Undergraduate Student Research in Special Education in the Spokane Public Schools*
We will present three papers showing the efficacy of employing undergraduate students in carrying out action research in the classroom. Each of the papers provides an evidence-based approach to classroom research with undergraduates as researcher and senior author. These studies were carried out in resource rooms as well as in a self-contained classroom setting in an alternative high school. The performance for each of the participants improved when the various intervention procedures were employed.

Faculty Moderator: Thomas McLaughlin

- 10A Olivia Owen and Kevin Pierce. "The Effects of Employing a Structural Analysis to Choose and Implement an Academic Intervention for a Single High School Student with ADHD and OCD." This case study was conducted to determine the cause(s) for our participant Lucy's aberrant behaviors utilizing a functional behavior assessment manipulating easy and hard math tasks. The results of the structural analysis indicated inappropriate behaviors were due to the participant's difficulty of assignments. The researchers assessed mathematical skill level in order to provide appropriate class work. These outcomes led the researchers to implement a Strategy-Model-Test (SMT) procedure to teach her skills pertaining to addition/subtraction multiplication and division of positive and negative integers. Results from the SMT procedure illustrated an

increase in math skills. The efficacy of employing both a structural analysis and SMT were discussed.

Faculty Sponsor: Kimberly Weber

- 10B Adam Skarr. "A Comparison of Direct Instruction Flashcards and Cover Copy Compare to Teach Spelling to Elementary Students with Learning Disabilities."

The purpose of this study was to evaluate the methods of CCC and DI flashcards in spelling. We wanted to examine the efficacy of these two procedures with both general and special education students. The final purpose was to compare CCC and DI flashcards between students employing a counter-balanced multiple-baseline and reversal design. The participants were three fourth-grade females one age 9 and the other two age 10. They were diagnosed with learning disabilities or deemed at-risk. The study was conducted in an elementary resource room classroom in a low-income Title I elementary school. The skill measured was the spelling of core words. The results showed mastery of spelling words using either CCC and DI flashcards. Both procedures were easy to implement.

Faculty Sponsor: Thomas McLaughlin

- 10C Chelsae Komar. "The Effects of Direct Instruction Flashcards on Math Performance with Measures of Generalization."

Learning the names of numbers and being able to recognize them out of sequence as well as know basic addition facts are critical skills for academic success. The purpose of this study was to determine the effectiveness of DI flashcards procedure on the correct responses to basic addition facts and number identification. The participants were three elementary students in a special education resource room. A multiple baseline design across number and fact groups and participants was employed. The success of the procedures led to the continuation of the intervention. The participants enjoyed the procedures and each improved their academic skills over their baseline performance.

Faculty Sponsor: Thomas McLaughlin

Special Session 11. *Proyectos en Español*

Selected projects in Spanish.

Faculty Moderator: Kim Hernandez

- 11A Jaime Rebuelta. "El Mercado Mexicano."

In my presentation I will share and explain the general history traditions cultures of Mexico. However when I get into the business aspect I will be explaining the SWOT analysis in entering the mexican market to do business. In addition I will also discuss the business culture in Mexico and how it differs from the general Mexican culture.

Faculty Sponsor: Kim Hernandez

- 11B Elizabeth Wall. "Leonor de la Cueva y Silva's Work to Change the Role of the Woman in the Spanish Golden Age."

In my presentation, I argue that "Song of the Son" not only creates a fluid narrative to "Cane," but also a sense of ancestral consciousness, which provides an identity for both the Northern Black American and the second generation descendants of former slaves.

Faculty Sponsor: Kim Hernandez

- 11C Nathan Gelinas. "Gangs in Latin America."

A study and analysis of the various gangs and their influences in the Americas.
Faculty Sponsor: Kim Hernandez

Special Session 12. *Proyectos en Español (Part II)*

Selected projects in Spanish.

Faculty Moderator: Kim Hernandez

21A Fatima Rodriguez. *“Sor Juana Ines de la Cruz.”*

This oral presentation will focus on the life works and influence of the renowned and praised Mexican writer Sor Juana Ines de la Cruz. Throughout her life she defied the strained regulations society placed on the female gender which would ultimately lead to her downfall. Also to be examined in this presentation will be one of the many controversies surrounding her real feelings toward religion. Though controversy always followed Sor Juana during her life even in death many have begun to question or doubt the ideas she stood for and have labeled her a hypocrite and modern heretic.

Faculty Sponsor: Mike Fulton

12B Haley Krueger and Fatima Rodriguez. *“La Mara Salvatrucha.”*

La Mara Salvatrucha, conocido por el titulo de MS-13, tiene una presencia internacional que es bastante grande en los EEUU y en El Salvador. Con la ayuda financiera de la regulación de comercio en sus barrios y la trafica de drogas, la Mara tiene la flexibilidad de establecerse en territorios grandes y comprar armas profesionales. Debido al misterio acerca del liderazgo de su organización, la Mara ha obtuvo una reputación formidable por ser impenetrable y las intenciones gubernamentales a parar la diseminación de la cultura pandillera han sido ineficaces a lo largo. En esta presentación, investigaremos los orígenes, el aspecto cultural de la Mara, y sus efectos en los EEUU y en El Salvador. También hablaremos de temas como la cultura pandillera, el narcotráfico, la inmigración, la violencia, y la presencia de sus altos números en el sistema judicial.

Faculty Sponsor: Kim Hernandez

12C Dori Simpson. *“Los papeles femeninos durante la revolución mexicana.”*

Desde la niñez, hemos recibido una multitud de mensajes que nos enseñan que significa ser un hombre o una mujer. Como resultado de ésta socialización, cada cultura forma sus propias ideas sobre cuáles son sus papeles, y no es diferente en el país de México. En su novela, *Arráncame la vida*, la escritora Ángeles Mastretta presenta este tema a través de una historia que nos hace pensar, no solamente sobre una historia de ficción, pero también sobre los papeles de las mujeres mexicanas durante la revolución mexicana. Por la historia de la protagonista, Catalina, Mastretta escribe como ella se adapta a los papeles femeninos y como, a veces, se rebela contra ellos también. De ésta forma, ella crea la oportunidad para los lectores de pensar en la gran influencia de estos papeles en las vidas cotidianas de las mujeres. Faculty Sponsor: Natalia Ruiz-Rubio

Special Session 13. *Projects in Modern Languages*

This session spotlights the original research of specialists in Spanish and French. Projects range from investigations of a linguistic nature to questions of culture and literature.

Faculty Moderator: Bendi Benson Schrambach

- 13A Christina Chea. "A Study of French Idiomatic Phrases."
In the field of French linguistics etymologists investigate the development of idiomatic expressions which French speakers use daily and habitually. The hypothesis of this research states that the cultural implications of a people or person can offer ideas of how idiomatic expressions are formed how they evolve and how they are understood. This research will take several French idiomatic expressions determine their origin and how it has evolved and survey students on what they understand of the meaning of each expression (given the direct translation). The hypothesis is that the more a student knows about the French culture the more they will understand the meanings of the expressions.
Faculty Sponsor: Bendi Benson Schrambach
- 13B Julia Bovee. "The Lost Boys: The Untimely Deaths of Peter Pan and Le Petit Prince."
Traditionally J. M. Barrie's Peter Pan and Antoine de Saint-Exupery's Le Petit Prince are considered quintessential novels on childhood. Saint-Exupery describes the Little Prince as an idyllic embodiment of youth and imagination. In Western culture Peter Pan has become the ultimate symbol of youth as the boy who never grew up. However death casts a somber shadow over the childhood innocence of Peter and the Little Prince who both encompass the binary opposition between youth and death. These paradoxical characters demonstrate that youth can never truly be preserved and the only way to physically end growth is to die.
Faculty Sponsor: Bendi Benson Schrambach
- 13C Rachel Kelly. "La Femme Noire: Women in Senghor's Poetry."
Leopold Sédar Senghor was a Senegalese poet who was also the first African member of L'Académie Française and the president of Senegal. His poetry concentrates on issues of African identity and culture. Throughout his work, Senghor includes women as subjects and as means to discuss African culture. Women appear as representatives of many different roles and ideas, including that of the mother, the lover, and Africa. Senghor writes of the mother as a protector and as a link to cultural heritage. In his poetry, Senghor often uses the female lover to write about woman's natural beauty. Images of African land and culture and descriptions of women are often mixed in Senghor's poetry.
Faculty Sponsor: Bendi Benson Schrambach
- 13D Desiree McIntire. "Cultural Differences in Advertising."
This project will discover the similarities and differences between French and US advertising. The goal is to show that the French although using the same techniques that the US uses push more limits with sexuality. Research includes viewing modern French and US commercials and magazine advertisements and discerning the differences in communication. It's been noted that both countries use the same manners of connecting with their viewers. Music children and animals are often used in both countries to grab viewers emotionally. However the US is more censored with nudity. The French are more risqué and are less offended by nudity on the screen. This research shows the want of enjoyment in the two countries but also the different tastes and standards of publicity. These findings may provoke further research on causes of diversity and how the countries' cultural connection could be changed in the future.
Faculty Sponsor: Bendi Benson Schrambach

Special Session 14. *The Self Told Slant: Explorations in Creative Nonfiction*

Following Emily Dickinson's line Tell all the Truth but tell it slant (a line more recently co-opted by essayists Brenda Miller and Suzanne Paola in their textbook) four students will read creative nonfiction

that examines the self. Each writer on the panel takes his or her own slant on personal writing. The angles of approach include landscape native and adopted places family conversion to the writing life theology hydrology and (quite possibly) samba dancing. These pieces vary in style from the highly fragmented and aphoristic to the more expository. This panel promotes thinking about links between form and content. The students' work also demonstrates that writerly paradox (and Biblical notion) that to gain life one must lose it or to write effectively about the self a writer looks outside the self. In memorable personal essays these writers follow their experience and expertise as oblique paths toward a deeper self-knowledge.

Faculty Moderator: Nicole Sheets

14A Caitlin Wheeler. "Painting the Piankatank."

In this personal essay, I explore my journey into writer-hood by tracking it through my attempts to please my extended family. It is a braided essay written mostly chronologically but jumping from scene to scene in my childhood with the storyline of one particular summer strung throughout.

Faculty Sponsor: Nicole Sheets

14B Isabel Nelson. "It's Not That Easy."

An exploration into the self through personal associations and connotations of the color green. This is not a color filter because nothing is being sifted out. Rather these are fragments which are pulled together by their common color. They are juxtaposed in order to study their place in representing the self; splinters of pain memory recurring images failures and joy.

Faculty Sponsor: Nicole Sheets

14C Bridger Landle. "One Man Clutches a Memory of Water."

In this aphoristic piece the writer examines the relationship between landscapes and the inner mind while emphasizing the themes of age inheritance and loss. In turn these themes are approached via the motifs of water rocks and mining. This piece is part of a larger panel of creative non-fiction essays by three other authors; each essay in this panel examines the nature of the self with a particular slant (in the spirit of Emily's Dickinson's "Tell the Truth but tell it slant") on personal writing.

Faculty Sponsor: Nicole Sheets

14D Sarah Glady. "Going North."

My piece will focus upon the effect of geography and travel on identity. As part of a group examination of the self and personal slants I consider my time spent in the United Kingdom Washington and other places I have travelled against my childhood in Arizona. In addition to geography I also examine the role of faith and God in stewardship change and the call of the wild.

Faculty Sponsor: Nicole Sheets

Special Session 15. *How to Operate a Postmodern Butterfly: The Literary Postmodernism of Kurt Vonnegut, Jorge Luis Borges, and Vladimir Nabokov*

This panel will include three papers on literary postmodernism exploring (in turn) the work of Kurt Vonnegut Jorge Luis Borges and Vladimir Nabokov.

Faculty Moderator: Fred Johnson

15A Natalie Segó. "Counteracting Death: Hope Found in Vonnegut's *Slaughterhouse Five*."

In this presentation I will argue that Kurt Vonnegut's novel *Slaughter House Five* sets out to emphasize the hope found in understanding death alongside the more trivial things in life. I will do this by first demonstrating Vonnegut's use of repetition as a means of juxtaposing death with life. I will then comment upon Vonnegut's use of dark humor and comic relief to present death in a humorous light. Vonnegut's manner of using a non-linear narrative to highlight the hope found in life is the final thing I will analyze in order to demonstrate that while death and life go hand in hand Vonnegut emphasizes the importance of enjoying life over anticipating death.
Faculty Sponsor: Fred Johnson

15B Jacquelyn Wheeler. "The Impossibility of Knowing in Borges' 'Tlön, Uqbar, Orbis Tertius.'" This paper explores the idealist roots of the short story "Tlön, Uqbar, Orbis Tertius", the mystery of whether Tlön could have existed prior to the world adaptation of it, and the prospect of it ever existing in the future. It also briefly discusses Borges' likely intentions in creating this kind of story contrary to what other critics have supposed.
Faculty Sponsor: Fred Johnson

15C Stephanie Jordan-Thompson. "Nabokov: Replicating Life on the Page." Vladimir Nabokov demonstrates several postmodern ideas throughout his writings. He toys with the concept of capturing life in concrete forms. He employs his expertise in Lepidoptera to explore notions of freedom time and beauty. Nabokov constantly questions metanarratives through his characters and plots. Postmodern tendencies also become clear in Nabokov's theories on the simultaneity of time. Though critics often disapprove of the seemingly trivial topics Nabokov pursues he is able to use ideas within lighthearted subject matter to grapple with postmodern theory.
Faculty Sponsor: Fred Johnson

16A Hannah Kinnier. "Comparing Use of Incentives in Survey Participation Among College Students." Written surveys and questionnaires are one of the most common means of collecting primary data. Some people however do not wish to participate without additional incentives or motivation whether extrinsic or intrinsic. Incentives range from compensation for involvement to satisfaction for helping a cause. This research tested the motivation behind college students ages 18-23 participating in a survey. The goal was to understand the factors that create willing participants for research studies so that marketers are able to effectively gather data from a desired source. Similar surveys were given at separate times using different methods: Time A offered no incentives or motivation for participation Time B informed participants of how they helped a cause while Time C gave participants a reward for taking the survey. The surveys examined the moods reasoning and external factors of the participants to find a relation between the subjects and their willingness to participate.
Faculty Sponsor: Brad Sago

16B Callie Chestnut. "Identifying Desirable Characteristics of Vacations to College Seniors." There are many options and characteristics to look for when planning a vacation. One must decide what type of trip to look for; a destination vacation an adventure vacation a volunteer oriented vacation etc. Additional characteristics to determine between are price and how to search and book the trip. This research examined different characteristics that are more or less desirable imperative information for travel agencies to understand what appeals to potential travelers. College seniors or recent graduates are an important group to focus on since they are coming into financial resources for the first time and will often look to take a trip within five

years of graduation. Using a survey college seniors age 21-23 were asked a series of questions rating their interest in different characteristics of vacations and what is most desirable.
Faculty Sponsor: Brad Sago

- 16C Elizabeth Seccomb. "Purchasing Behaviors of College Seniors and Graduates For a Post-Graduation Fitness Center."
Consumers purchase products based on their own needs as well as product attributes. This research examines the purchasing behavior for a post-graduation fitness center memberships by college seniors and graduates ages 21 to 25. Since most colleges offer a fitness center on campus at no additional charge to students many college students do not consider buying a fitness membership for post-graduation use until their senior year or even after graduation. This provides an influx of potential members into the fitness market. By determining the current purchasing behaviors of this market fitness centers can specifically design marketing campaigns to attract college graduates as potential members. A written survey was conducted to identify post-graduate fitness center purchasing priorities that include but were not limited to: price location fitness class offerings equipment and hours of operation.
Faculty Sponsor: Brad Sago
- 16D Hayley Dannettell. "Price Sensitivity of Organic Products for College-Aged Students."
Organic products have become increasingly popular and tend to be more expensive than generic products. This research described the reason for any price sensitivity in the college-aged demographic in choosing to purchase generic/non-organic products versus their more expensive organic counterparts. Various types of organic products and their non-organic substitutes were tested to determine a college student's sensitivity to the increase in price experienced in the purchase of organic goods. The research tested the hypothesis that greater price disparity demographics of college students and the different types of products influence purchasing habits. Organic product producers should evaluate the characteristics that determine a college-aged person's purchasing habits and cater their product to address those traits in order to gain a customer base that may buy organic food throughout their lifetime.
Faculty Sponsor: Brad Sago
- 17A Aryn Gessel and Colin Zalewski. "CMC and Romantic Relationship Development."
The purpose of this study was to examine the effects of computer mediated communication (CMC) on overall relationship satisfaction in FtF (face-to-face) romantic relationships. Key variables included time spent together per week and time spent per week using various modes of CMC including text based (text messages emails etc.) phone and Skype. The findings of this study supported past research which found communication of any type regardless of whether it is CMC based or not has positive byproducts for overall relationship satisfaction. Notable findings also included a positive relationship between phone usage and predictability within the relationship.
Faculty Sponsor: Alan Mikkelson
- 17B Monica Calderon and Trista Van Berkum. "How Verbal Aggression and Communication Competence Affect Marital Satisfaction."
Everyone who marries hopes for a happy union. Unfortunately marital difficulties can often lead to dissatisfaction in marriage. This study examines how verbal aggression interacts with communication competence to affect marital satisfaction. The first hypothesis stated that communication competence is positively related with marital satisfaction. The second

hypothesis stated that verbal aggression is negatively related to marital satisfaction. The research question asked if communication competence mediates the verbal aggression-marital satisfaction relationship. Data was collected on marital satisfaction communication competence verbal aggression and general/relational demographics. Both hypotheses were supported and it was found that communication competence did mediate the relationship between verbal aggression and marital satisfaction. In conclusion when higher degrees of verbal aggression were present there was a corresponding lower degree of marital satisfaction.

Faculty Sponsor: Alan Mikkelson

- 17C Stephanie Baker and Rhylee Smith. "Altruistic Lies in Romantic Relationships."
Although most lies are told with negative intent altruistic lies are used to protect benefit or help the lie receiver. Using qualitative open-ended questions this study explored the types of altruistic lies told and received between romantic partners. The content of lies typically involved spending time with the opposite sex and protecting the other's feelings. Intent of the lies feelings associated with receiving and telling lies and content of lies were explored. Coded results showed that both guilt and feeling positive about protecting the other were associated with telling altruistic lies while hurt feelings and anger were most commonly related with lies received.
Faculty Sponsor: Alan Mikkelson
- 17D Rachel Mitchell and Whitney Hedgpeth. "Helping Behavior in a Chat Room Environment: Do the Numbers Matter?"
This study examined bystander effect in an online situation through reaction time presence of helping behavior and extent of helping behavior. This topic was chosen because of the lack of research done involving the bystander effect and the internet. Researchers observed 24 individuals: twelve believed they were one of two people in a chat room and twelve believed they were one of four. The results indicated that between groups there is no significance in time. However the results also showed a significant difference in helping behavior and extent of helping behavior. These findings support the hypothesis that in an online situation those whom believe they are one of two people communicating are more likely to help than those whom believe they are one of four people and to a greater extent. These results suggest that the bystander effect is present in an online situation. The implications are discussed.
Faculty Sponsor: Patricia Bruininks
- 18A Kalah Dooley. "Desire and Chaos: The Fairies of *A Midsummer Night's Dream*."
Many critics of Shakespeare's "A Midsummer Night's Dream" have explored the role of the fairies. Of these most have taken the opinion that these creatures can be read as either malevolent or benevolent. This paper utilizes Shakespeare's text along with the critical work of Allan Lewis Hugh Grady and Mary Ellen Lamb including historical views about fairies and looking at productions of the play to examine how the fairies embody both characteristics. It also looks at how their world is both parallel to and distinct from the world of Athens signifying these places as two necessary parts of one whole. The fairies as both evil and kind creatures present a challenge to the selfish desire-based worldview of the four lovers that ultimately facilitates their ability to live successfully and harmoniously in Athenian society. This suggests a need for balance between structure and desire reality and imagination.
Faculty Sponsor: Heather Easterling
- 18B Tayler Mustion. "If You Can't Perform We'll Get Someone Who Can."

One of the most compelling elements of Shakespeare's second tetralogy is the way he asserts the importance of performance as a foundational characteristic of the monarchy. Throughout the three kings that Shakespeare portrays with these plays there is a drastic progression of the nature of the kingship as both a symbol and manifestation of England as a country. After Richard's deposition the realities of the crown are deconstructed and taken into a period of monarchical insecurity through the rule of Henry IV and then reconstructed through the emergence of the overly heroic Henry V. This paper works in dialogue with Shakespeare critics Phyllis Rackin Jean Howard and James Calderwood to explore the importantly distinct way that both kings use performance to maintain their authority. Through this exploration Shakespeare reveals two distinct types of performance both theatrical and possessing the drama of a royal persona but originating from very different places.

Faculty Sponsor: Heather Easterling

- 18C Michael Gray. "Pedagogy of the Oppressor: Henry V Language Cultural Invasion and Divide and Rule."

Pedagogy of the Oppressor: Henry V Language Cultural Invasion and Divide and Rule is an exploration of Shakespeare's Henry V and its connections with Paulo Freire's Pedagogy of the Oppressed. I use Freire's discussion of dialogics and antidialogics and in particular antidialogics. I focus on "Cultural Invasion" and "Divide and Rule" as central in complicating King Henry's wooing of Princess Katharine (Act 5 Scene 2) Princess Katharine's English lesson (Act 3 Scene 3) Henry's speech to the men of Harfleur later in that act and Henry's treatment of his countrymen (Act 3). The paper argues that Henry V and Pedagogy of the Oppressed operate in a dialogue the Freire text offering useful commentary on the oppressor-oppressed relationship in Shakespeare's play. I mention that Stephen Greenblatt in his essay "Invisible Bullets" explores the idea of language used as violence but that Freire's discussion of "Cultural Invasion" and "Divide and Rule" provides a new perspective.

Faculty Sponsor: Heather Easterling

- 19A Cullen Grow. "Characteristics of Very Round Numbers and Smooth Numbers."

Round numbers are said to be numbers that have lots of divisors. Very round numbers abide by a more rigorous definition. We explore the world of very round numbers as we define what they are and how they can be found. We look for patterns in the characteristics of a very round number and determine whether there are infinitely many. We compare them to smooth numbers and discover the many different ways a number can attain smoothness.

Faculty Sponsor: Donna Pierce

- 19B Jamie Haddock. "Probabilistic Part-of-Speech Tagger."

Parsing or part-of-speech tagging requires analysis of the structure of sentences but a very accurate method can be achieved using a probabilistic algorithm. We are creating a part-of-speech tagger that can achieve accurate results using simple probability calculations given a large sample of written text. Using simple counting techniques and Baye's Theorem we calculate the probability both of a given part-of-speech being associated with a given word and of that given part-of-speech following another. Then using the Viterbi algorithm we can use these probabilities to find the most likely parts-of-speech to be associated with a string of words. This same probabilistic method could and will eventually be applied to speech recognition creating a syllable to meaning "tagging" system generating more precise recognition results and a more efficient system.

Faculty Sponsor: Paul DePalma

- 20A Angela Hartley. "Argentina and Chile: Gender Empowerment Compared."
There are many cultural and historical similarities between Argentina and Chile. Yet the United Nations ranks Argentina as 24th in the world in gender empowerment while Chile falls far behind at 75th. Argentina currently ranks 6th in the world in women's parliamentary presence; Chile ranks 79th. With strikingly similar histories it is important to ask what factors have caused Argentina to advance in gender empowerment while Chile has lagged behind. To explore this question factors generally considered to be obstacles to gender empowerment will be analyzed. Then comparing the political history in both countries additional factors that have not been clearly discussed in gender empowerment literature will be investigated. This study argues that the variation between degrees of gender empowerment is derived from a strong civil society an electoral system conducive to women's representation and the historical precedence of women in politics.
Faculty Sponsor: John Yoder
- 20B Amanda Ramey. "Women and Combat: Examining the Constitutionality of Preventing Women from Combat Roles Based on the Premise of Gender."
In the United States women still face discrimination within the military based on their gender. This is an important issue facing that nation today as our society continues to strive for equality and justice. The presentation will provide a constitutional critique on the current military policy preventing women from holding certain positions. Thesis: It is a violation of the 14th amendment's Equal Protection Clause for the United States military to prevent women from combat positions based strictly on an individual's gender. Outline: History of women in the military the current policy and the specific restricted military positions the questionable constitutional violation which test should be used to weigh if the policy is unconstitutional examination of relevant Supreme Court Cases that have set a precedent for how to apply the test applying each part of the test how the current Supreme Court Justices might rule on such a case.
Faculty Sponsor: Julia Stronks
- 20C Diana Mallon. "*¿Te Queremos Proteger?* Sexual Violence and Community Responses in Northern Chile."
The rate of sexual violence and other kinds of violence against women in Chile is quite high. Sexual violence including rape and other non-consensual sexual contact is a form of social control exercised against women; violence and the community's response are both indicators of the level of gender parity (or lack thereof) in a culture. In Chile if a survivor decides not to press charges she loses access to many resources provided by the legal system furthering the rape myth that a victim is responsible for earning support through participation in a legal system. The response to survivors of sexual violence in the indigenous Aymara community is problematic in its lack of cultural sensitivity. In rural and indigenous communities where the connection to the land is more culturally important the Chilean model of protection through evacuation represents a disruption in the life of the victim and keeps her from accessing services.
Faculty Sponsor: Jane Rinehart

- 20D Skye Miner. "The Gendered Politics of Gardasil: How Newsprint Media Reinforces The Gender Binary."
This research examines the gender politics associated with Gardasil the human papillomavirus (HPV) vaccine that aids in the prevention of HPV and HPV-related cancers. Gardasil is presented as a breakthrough in women's sexual health yet it instigates necessary questions about women men health and inequality. Through the use of a content analysis I am describing the ways in which Gardasil was framed in newspaper articles during two different time periods (before and after the FDA approval for men). This comparative research examines how Gardasil was initially framed to be a woman's problem. Newspaper articles were gathered by a random sample of articles available in the online database LexisNexis. By focusing solely on women the media continues to contribute to the medicalization of women's sexual health along with supporting the gender binary which consequentially inhibits the health of women and men.
Faculty Sponsor: Vikas Gumbhir

Special Session 21. *The Christian Transformation of the Classical Heritage*

This panel will address the various ways fourth century Christians integrated ideas from their Greco-Roman culture to establish themselves in the late antique world. Looking at art numismatics and literature we shall consider what elements of the Roman heritage could (and could not) be Christianized.
Faculty Moderator: Richard Goodrich

- 21A Sydney Taylor. "The Christianization of a Roman Virtue"
Among the more frequent and complex symbols to undergo an iconographic redefinition in Christian terms particularly in numismatic images was the Roman goddess Victoria. The adaptation and redefinition of this traditional Roman Virtue into a Christian angel illustrates the long complex and in many ways controversial acclimation of Christian beliefs within a civic-minded Empire. Victoria as a symbol of the prosperity of the Empire and its centuries of victory in a Christian context morphed into an angel sent by the Christian God rather than the pagan Jupiter despite her Altar's frequent expulsions from the Senate house in Rome. The adaptation of the traditional Victoria as citizens of the Empire increasingly converted to Christianity allowed for the continued symbolic veneration of the Empire's success and perhaps by the fifth century the hope that its prosperity would be restored by the God-sent Angel of Victory.
Faculty Sponsor: Richard Goodrich
- 21B Corinne Ankenbruck-Keogh. "The Creation of the Christian Sibyl."
An overview of the creation and transformation of the ancient Greek and Roman Sibyl into a Christian entity found throughout Christian iconography and ideals.
Faculty Sponsor: Richard Goodrich
- 21C Antone Pierucci. "Artistic Rendering and Divine Attribute: Depictions of Jesus' Staff in Fourth Century Christian Relief Sculpture."
Throughout the fourth century artistic renderings of Christ's miracles became a popular motif particularly in the relief sculptures of late third fourth and early fifth century Christian sarcophagi. One unique and near ubiquitous feature of these depictions is Jesus' use of a staff or rod primarily in miracles of resurrection and the miracle of the bread and wine. Although some scholars have identified this iconographic tool as a magical wand I would argue that it was instead used as both an artistic moment marker that elucidated a complex occurrence and as an attribute that exemplified the divine power and authority of Christ.
Faculty Sponsor: Richard Goodrich

Special Session 22. *Southern Writers*

Papers on twentieth-century southern literature.

Faculty Moderator: Laura Bloxham

- 22A Sarah Glady. "The Price of Salvation."
This paper will examine the themes of salvation and debt in Flannery O'Connor's *Wise Blood*. It will examine the leading man Hazel Motes who is not willing to pay because he refuses to look at the price tag of the Jesus in the store of eternity. Although he is hiding he knows that he wants to be clean he wants to live without the debt of sin he wants to live for nothingness all while believing he is too far in debt to ever truly be released from his overdrawn balance and legalistic and futile view of Jesus. Through this character O'Connor delves into a societal view of God all the while questioning the role of guilt good works sin and relationships against Motes own salvation. Is salvation earned bought or given and what are the repercussions of that answer? This paper will also review the themes common to all Southern Renaissance literature such as death decay the role of family fate and the role of spiritualism.
Faculty Sponsor: Laura Bloxham
- 22B Aubrey Cain. "'Self-Inflicted Lobotomy': Identity and the Past in *All The King's Men*"
Robert Penn Warren's *All The King's Men* includes a scene in which Jack Burden watches his friend Adam Stanton perform a lobotomy, the surgery intended to save the patient from his "numbing, grinding misery" (476). Warren draws a parallel connection between Adam's surgery and the character of Jack. Jack, who is also seeking to find relief, embodies both the role of surgeon and patient in his own life. Instead of dealing with the issues of his past, Jack conducts psychological lobotomies on himself, cutting memories out of his brain and creating a different personality for himself. Warren uses this notion of a psychological lobotomy and Jack's character to explore the idea of identity and its dependence on coming to terms with the past, emphasizing that without his past, Jack's personal identity is lost.
Faculty Sponsor: Laura Bloxham
- 22C Lesley Richter. "'Pour O pour that parting soul in song': Exploring the Condensation of Jean Toomer's 'Song of the Son' in *Cane*."
With only one well known publication to date, Jean Toomer has fallen from the cannon since his 1922 debut of "Cane." However, through his recent revival, new Toomer critics reveal the importance of his poem, "Song of the Son," as a condensation of all primary themes in "Cane." Through "Song of the Son," Toomer's seemingly separated sections become synthesized, leaving a nostalgia for the waning slave culture and the return of the black Southern American to his native land.
Faculty Sponsor: Laura Bloxham
- 22D Karen Robison. "The Voice of Caddy Compson through Faulkner's Style and Structure."
In *The Sound and Fury*, William Faulkner's unique use of style and structure centers on the character of Caddy Compson, the focal point of the novel. Through Caddy's past actions, the other characters' personalities and strengths are revealed. Faulkner uses Caddy to illustrate the flaws of the other character, which, in itself exemplifies her extreme importance throughout the text. Faulkner uses Caddy to transcend the written chapters and reveal the intimate elements of

the story. Caddy represents both the “sound” and the “fury” and is the most significant character in Faulkner’s *The Sound and Fury*.

Faculty Sponsor: Laura Bloxham

- 23A Emily Dossey and Kimberly Dix. “The Effects of Modeling a Token Economy and Self-Recording on the On-Task Behavior of a 3rd Grade Student Diagnosed with an Intellectual Disability.”
The purpose of this study was to evaluate the effects of modeling a token economy intervention and self-recording intervention on the on-task behavior of a 3rd grade student with intellectual disabilities. The instructors modeled on-task and off-task behavior for the student. The student earned a point for each reading exercise she completed with on-task behavior and the instructor earned a point for each reading exercise during which she was off-task. The student received a prize contingent on earning more points than the instructor and on correctly recording points. The intervention increased the child’s on-task behavior from an average of 30% of intervals on-task during baseline to 71% during the instructor-recorded token economy intervention to 91.7% during the self-recording token economy intervention. The procedure was cost effective and required little training to implement.
Faculty Sponsor: Betty Williams
- 23B Jessica Mangundayao and Christine Clenin. “The Effects of Direct Instruction Flashcard Procedure on the Mastery of Sight Words and Letters by Two Elementary School Special Education Students.”
The purpose of this study was to evaluate if the effects of the Direct Instruction Flashcard procedure on 1) the accuracy of identifying lowercase letters by a 3-year-old male with developmental delays and 2) on the accuracy of reading sight words by a 9-year-old male with developmental delays in a special education classroom setting. A single subject multiple baseline design across three sets of words and three sets of lowercase letters were used to evaluate the effectiveness of the intervention. A clear functional relationship was shown between the Direct Instruction Flashcard procedure and improvements in identifying letters by the 3-year-old boy and in oral reading of sight words by the 9-year-old boy. The procedure was cost effective and required little training to implement.
Faculty Sponsor: Randy L. Williams
- 23C Mika Aoyama and Stefoni Olmstead. “The Effect of the Math Racetrack and Model/Lead/Test Procedures on Counting Skills of Two Students with Disabilities.”
The purpose of the present study was to evaluate the effects of the Math Racetrack and Model/Lead/Test procedures on the accuracy of rational counting from 1-10. A multiple baseline design across three sets of target numbers to be counted was used to evaluate the combination of the Math Racetrack and Model/Lead/Test procedure. The sets included counting 1-4 counting 5-7 and counting 8-10. There was a clear functional relationship between the Math Racetrack and Model/Lead/Test procedures and increases in the accuracy of counting. During Baseline the participants had mastered counting to one out of ten numbers but by the end of the study they had mastered counting eight out of 10 numbers. The procedures used were inexpensive and required little time or effort to implement.
Faculty Sponsor: Randy L. Williams

- 23D Ethan Smith. "Influence of Substrate Types and Environmental Manipulations on the Burrowing Ability of *Venerupis philippinarum* as Studied on San Juan Island."
The ability of bivalves to burrow in varying substrates and altered environmental conditions was studied. Most of the research centered around the Manila Clam (*Venerupis philippinarum*) while select studies were conducted with the Pacific Littleneck Clam (*Protothaca staminea*). Four buckets of substrate were collected and placed in seawater tables. The bivalves were monitored by a strand of fishing line attached via WaterWeld to the clam's anterior end. For the environmental manipulations a lamp was suspended over the buckets of substrate to provide both bright light and heat. After numerous trials the *V. philippinarum* species of clams appeared to have a burrowing preference of: Clay > Pea-Gravel > Control > Coarse Sand. The *P. staminea* species tended to burrow deeper than the *V. philippinarum* species. Initial results seem to indicate that a more substantial burrowing depth occurs when the *V. philippinarum* clams are exposed to bright lights and increased temperatures.
Faculty Sponsor: Craig Tsuchida
- 23E Emily Campbell. "Sheltering Behaviors of Two Small Intertidal Species of Crab *Hemigrapsus nudus* and *Hemigrapsus Oregonensis* as studied on San Juan Island."
The small purple shore crab *Hemigrapsus nudus* and its cousin *Hemigrapsus oregonensis* were the animals I chose to use in my experiments. Using four different small experiments and 25 crabs I observed their sheltering behaviors. By setting up a shelter of five stacked bricks and periodically removing them I observed how the animals reacted to a decreasing amount of available shelter. Then I set up five similar bricks determine whether or not they preferred sheltering in groups or individually. I then arranged five different bricks out separately to determine what kind of brick shelter would be preferred. My last experiment tested the behavior between two crabs of different sizes when offered very limited shelter space. The results of the four major experiments suggested that the animals do tolerate each others' presence well but larger crabs were allowed more room and that shelter with larger spaces to hide is preferred.
Faculty Sponsor: Craig Tsuchida
- 23F Cary Frick. "The Effect of Light Darkness and Water Flow on the Rate of Displacement of the Common Purple Sea Star *Pisaster ochraceus*."
This research studied the effect of light darkness and water flow on the rate of displacement of the ecologically important sea star *Pisaster ochraceus*. A string grid was constructed over a flowing seawater table to monitor the rate of displacement of *Pisaster* specimens in the different environments. The sea stars showed no pattern in their responses to the different environments but the results did suggest that mobile activity varies from individual to individual and possibly correlates with the size of the sea star. Additionally preference for high or low water flow environments was examined. A seawater table was divided into low and high water flow habitats with a brick breakwater structure doubling as a passageway for the sea stars. A habitat preference could not be determined but certain behaviors supported the claim *Pisaster* prefers close spaces with objects for shelter as they predominantly chose to inhabit the brick passageway.
Faculty Sponsor: Craig Tsuchida
- 23G Kayla Strahm. "The Effect of Water Temperature on the Velocity and Mobility of Marine Hermit Crabs."

Life in the rocky intertidal is in large part dependent on an organism's agility. I tested the effect of changing water temperature on the mobility of marine hermit crabs (more specifically *Paurus armatus*). Fifteen similarly sized hermit crabs were collected on the Coast of San Juan Island. Five *P. armatus* were kept in a running seawater aquarium (8.8° C) five in a room temperature aquarium (15.8° C) and five in a heated aquarium (23.4° C). Timed trials were conducted measuring the velocity of movement toward a food source. The second portion included timing how long it took for the organism to turn over its shell. It was clear that as the seawater temperature was raised *P. armatus* became increasingly inactive. The quickest velocities were observed in the coldwater trials and decreased as the water temperature increased. Based on the trends observed I concluded that the exposure to increasingly warmer water has a negative effect on the mobility of *P. armatus*.

Faculty Sponsor: Craig Tsuchida

- 23H James Fronk. "Comparison of Measured Ammonia Secretion Levels between *Pisaster ochraceus*, *Stichopus californicus*, *Cancer antennarius* and *Pandalus danae* as Studied on San Juan Island." Marine animals simply flush ammonia out of their body straight into their surrounding environment. I was curious about how much ammonia they produced and released into their environment and which creature produced the most. The organisms used for this experiment include: *Pisaster Ochraceus*, *Stichopus californicus*, *Cancer antennarius*, and *Pandalus danae*. The hypothesis of this experiment was that all specimens would secrete ammonia; size would be the greatest factor while the phylum/class would have a less dominating effect. For this experiment the four different specimens were isolated in separate tanks containing the same amount of seawater and kept at a constant temperature. Data was taken every 8 hours over a 56 hour period creating trend lines. From these trends I was able to conclude that the dominating factor in ammonia secretion levels is what class one belongs to size then plays a factor when comparing between two animals in the same class.
- Faculty Sponsor: Craig Tsuchida

- 23I Chelsea Barberio-Kitts. "Effects of Direct Instruction Flashcard and Reading Racetrack Procedures on Core Word Mastery by a Child with Autism." The purpose of the present study was to evaluate the effects of the Direct Instruction Flashcard system and Reading Racetrack procedure on mastery of core words by an eight-year-old boy with autism. A single subject multiple baseline design across three sets of core words was used to evaluate the combined use of Direct Instruction Flashcard system and Reading Racetrack procedure. A clear functional relationship was shown between core word accuracy and Direct Instruction combined with Reading Racetrack. The procedures were cost effective in terms of time money and effort.
- Faculty Sponsor: Randy L. Williams

- 23J Arlana Byers. "Investigation of Alcohol Use in an Individual Using a Breathalyzer EtG (Ethyl-glucuronide) and Self-Report." Collection of retrospective self-report data of alcohol use is subject to several problems including difficulties with recall and deliberate misrepresentation of alcohol consumption data. Two biomarkers of alcohol use were investigated in the current study: breath-tests (e.g. breathalyzer) and ethyl-glucuronide (EtG) (a metabolite of alcohol use) urine-tests. Breath-tests can detect alcohol use for 10-12 hours post-ingestion and EtG can be used to detect alcohol use up to 72 hours post-ingestion. These markers of alcohol use were compared to self-report to determine whether they accurately predicted patterns of alcohol use. Participants provided

breath and urine samples and self-report of their alcohol use twice a week for nine weeks. We compared results of breath and EtG biomarkers to self-reported alcohol consumption. Results indicated that EtG reliably predicted self-reported alcohol use the day before testing while breath-tests did not.

Faculty Sponsor: Donelle Howell

- 23K Wade Muncey and Trent Millin. "The Effects of Blood Glucose on Memory Recall."
This study investigated the correlation between increased blood glucose levels and an increased memory recall. Subjects fasted for a period of eight hours and then ate a regulated snack to raise their blood glucose levels. An understanding of how blood glucose levels are regulated before and after meals provides an insight into how higher glucose levels could provide an increase in one's memory. This experiment employed a memory test to elucidate if a correlation between increased memory and a rise in blood glucose levels exists. The memory test was administered twice for each participant followed by recording the results. While below normal blood glucose levels have been correlated with low memory recall the efforts in this study were within normal blood glucose values. Results show that an increase in blood glucose levels after eating a designated snack at the end of the eight hour fast resulted in increased recall ability.
Faculty Sponsor: Michael Sardinia
- 23L Jonathan Smith and Dieu Huynh. "Genetic Introgression of *Cyprinidae*s in Spokane area tributaries."
A major conservational problem and evolutionary issue among cyprinidae fishes is interspecific hybridization due to loss of gene flow in confined tributaries. In the Pacific Northwest tributaries and run-offs are converted for irrigation purposes which have caused the natural flow patterns of the streams to become altered or destroyed. Damming as well as other changes to the river have lowered the water quality to poor conditions. In this study we used a 1.1kb PCR product of the 12S and 16S regions to analyze possible divergence or introgression of the redbreasted sunfish (*Richardsonius balteatus*) and speckled dace (*Rhinichthys osculus*) in Cottonwood Creek a tributary of Latah Creek which runs into the Spokane River. Analysis of the cyprinidae sequences will further explain the genetic introgression or genetic diversity in tributaries of the Spokane area.
Faculty Sponsors: Randall James and Steve Fisk
- 23M Luke Meininger. "Habitat Preference of *Pisaster ochraceus* due to differing light levels."
Pisaster ochraceus is a sea star that is known to be a keystone predator. The purpose of this study was to determine whether *Pisaster* prefers light or dark environments. The hypothesis was that it would prefer dark environments. For the first experiment one third of the tank had no covering the middle third had 4 sheets of window screen over it and the final third had 6 sheets. Three organisms were started in the middle third. The organisms either stayed in the middle zone or migrated to the dark zone even when the zones were flipped. For the second experiment three organisms were started in the light. This time some *Pisaster* selected the bright zone. This indicates that light may have some inhibitory effect on the movement of *Pisaster*. The trends suggest that *Pisaster* may prefer the dark to the light but clearly *Pisaster* moves more freely in the dark.
Faculty Sponsor: Craig Tsuchida
- 23N Christopher Colvin. "Using Differential Scanning Calorimetry to Find Phase Diagrams for Organic Solvents."

When working with two solid organic solvents separating them can be a difficult task if a full range of mixed melting points is not known. If a eutectic phase diagram with a continuous temperature curve is not known separation of these solvents becomes a tedious chore. Differential scanning calorimetry (DSC) can be used to discover the eutectic phase diagram for many different combinations of solvents. Naphthalene and E-stilbene and naphthalene and pyrene were used to create two new phase diagrams. DSC was used to find endothermic peaks for the eutectic temperature and for the temperature of a second peak which was attributed to the solvent with a higher percent composition. The compositions found to be at the eutectic point were then analyzed using an ATR IR spectrometer. Naphthalene and E-stilbene had a eutectic composition of 80% naphthalene and 20% E-stilbene. In the second phase diagram the eutectic composition was found to be 63% naphthalene and 37% pyrene.

Faculty Sponsor: Karen Stevens

- 23O Ace Taylor. "Moving from Access and the OLEDB Connector to MySQL and the DbLinq Connector."
Spectrum-Agents is a suite of decision support tools that provides comprehensive informatics regarding Autism Spectrum Disorder. The system's purpose is to help clinicians and caregivers in screening and the treatment decision process. It includes a suite of tools revolving around the interest of providing early identification comprehensive diagnostic evaluation ongoing patient monitoring and evaluation of intervention programs. Initially the system used a Microsoft Access Database to store patient information. Due to the limitations of Access however moving to MySQL is necessary for extended use and patient data information storage. The use of C#'s LINQ through DbLinq is also greatly preferred over the OLEDB database handler previously in use. The use of MySQL with the Spectrum-Agents suite will allow for the application to handle a larger amount of data as well as a much larger number of users while also providing a non-proprietary multi-platform compliant database software.
Faculty Sponsor: Susan Mabry
- 23P Ben Hamming and Marc Rollins. "Low-Thrust Trajectory Optimization for Near Earth Asteroid Rendezvous Missions Using Plasma Propulsion Systems."
The results of a study to determine optimum low-thrust trajectories to near Earth asteroids using plasma propulsion systems is presented. The total mass and the trip time required to transport a fixed payload from low Earth orbit to land on a specified asteroid for various combinations of specific mass of the power plant input power efficiency and either exhaust velocity or mass flow rate were calculated by integrating the equations of motion of the spacecraft. The trajectories were then optimized to minimize the total trip time. The variations considered in this study were close to experimentally demonstrated values of performance parameters of a plasma thruster.
Faculty Sponsor: Kamesh Sankaran
- 23Q Sarah Flynn and Heidi Renstrom. "The Effects of a Modeling and a Prompting Intervention on a 3rd- Grade Student's Reading Accuracy Fluency and Expression in an After-School Tutorial Center."
The purpose of the present study was to evaluate the effects of a modeling and a prompting intervention and contingent praise on accuracy fluency and expression in oral reading for a 3rd-grade girl in an after-school tutoring program. During each session the student was asked to read aloud in her workbook. The number of correctly read sentences was recorded for each session. Praise was given as a contingent reward for reading perfectly and the student was

rewarded with points for correctly completing exercises in her workbook. When the student failed to read with expression the researchers modeled the sentence properly and required the student to read it again. The average number of sentences read correctly in each set during the intervention increased to 3.47 during intervention from a mean of 1.37 during baseline. The procedure was effective in increasing the number of sentences read with accuracy fluency and expression. It required little training to implement with no cost.

Faculty Sponsor : Betty Williams

- 23R Carlee Snider. "Field study of heavy metal contaminants in the hepatopancreas of *Lymnaea stagnalis wasatchensis* snails."
Researchers collected a total of sixty snails from two different sites thirty from Turnbull site 112 and thirty from Turnbull site 57. Sites 112 and 57 both represent freshwater sites located within a national wildlife refuge. Located near the edge of the refuge site 112 receives drainage from nearby agricultural sites while site 57 is located near the center of the refuge in a different drainage. To determine if there is a difference in the level of heavy metals between the two sites I analyzed the snails' soft-body parts. The dry weights of a total of twenty snails from each site (57 and 112) were taken. An In-Spec machine will analyze the hepatopancreas from eight snails from each of the two sites for levels of heavy metals such as Pb Ca P and Zn. If anthropic activity results in greater levels of heavy metals then snails from the site closer to agricultural activity may contain higher levels of heavy metals compared to snails from the reference site.
Faculty Sponsor: John Shea
- 23S Michael Weidemann. "Creating a Framework to Fight Celiac Disease with Varied Machine Learning Techniques by Combining Desired Protein Traits."
The goal of this project is to create a framework for discovering new protein candidates to be prolyl endopeptidases (PEPs) that are acidophilic and efficient at breaking down gluten. This framework will take an input of two strings of known PEPs and use some crossover mechanism (which could be interchanged with other crossover processes) to produce a testing string. This testing string will then be threaded onto known PEP structures and an energy value and sequence ID will be returned which are used as a fitness test to modify the crossover process through a machine learning algorithm. Ultimately this should help combat Celiac disease by creating an enzyme one can take with their gluten-containing food similar to the way someone who is lactose intolerant can take lactase with their food.
Faculty Sponsor: Kent Jones
- 23T Andrea Ansari. "Quenching of the Manganese-catalyzed Bromate-Ethylacetoacetate Oscillating Reaction Using Various Salt Solutions."
Oscillating reactions are unique reactions that while trying to reach equilibrium oscillate between two distinct states. It is possible that this could be used as a model for the chemical reactions occurring in the brain of someone who has bipolar disorder. This research looked at a modified Belousov-Zhabotinsky reaction and used various salt solutions to quench the reaction. The salt solutions used that did not successfully quench the reaction were lithium nitrate lithium carbonate and lithium orotate. The salt solutions used that did successfully quench the reaction were lithium iodide sodium iodide lithium salicylate and lithium bromide. The voltage and absorbance of the reaction was monitored.
Faculty Sponsor: Karen Stevens

- 23U Taylor Willi. "Lithium Quenching Experiments and Phase Space Analysis for the Oscillating Briggs-Rauscher Reaction."
Lithium is a mood stabilizer widely used to treat bipolar disorder oscillations. To better understand the role of lithium in quenching oscillating reactions the Briggs-Rauscher reaction was investigated with a series of halide and organic perturbations. Quenching was successful for LiF NaF LiI LiBr NaBr NaC₂H₃O₂ LiC₂H₃O₂ LiC₇H₅O₃ and LiC₅H₃N₂O₄. Results indicated that quenching was most dependent on the anion rather than cation of perturbation. Perturbation of LiC₇H₅O₃ was the most effective though it was introduced as an entirely new species to reaction. Addition of an entirely absent species compares to use of lithium in the brain to regulate bipolar disorder. The combination of measuring voltage potentials and spectrophotometer analysis allowed construction of a phase plot between color and voltage oscillations. It was found that before perturbation the reaction proceeds on a continuing limit cycle. No emerging pattern was found in phase space after perturbation.
Faculty Sponsor: Karen Stevens
- 23V Jacob McCallum. "Quenching the Oscillating Manganese-catalyzed Bromate-Citric Acid Reaction."
Bipolar disorder is a result of an oscillating reaction that takes place inside the brain. In order to potentially find a cure it is necessary to understand all aspects of oscillating reactions primarily how to quench the oscillations. This research explores the Manganese-catalyzed Bromate-Citric Acid Reaction and the various salts that possess the chemical properties to bring the reaction to a stable manifold. Lithium orotate is of high interest being that it is currently provided to individuals with bipolar disorder in hopes that it will calm the symptoms. It was found that sodium iodide lithium iodide sodium bromide lithium bromide lithium salicylate and lithium orotate all successfully quenched the reaction. However it took varying concentrations and amounts of each salt to fully halt the oscillations.
Faculty Sponsor: Karen Stevens
- 23W Tyler Dennis, Nicole Hamlin and Dina Storozhenko. "Analyses of Alu recombination rate in *Homo sapiens*."
Transposable elements or Alus are fragments of DNA roughly 300 base pairs long that insert themselves into different activation sites around the genome. When these elements insert themselves into different sites they can cause shifts in the genome by adding or deleting base pairs or affect how a gene is expressed. Because of this one chromosome may be longer than the other and can lead to unequal crossing over during mitosis. To assess recombination of chromosomes PCR and Hardy-Weinberg equilibrium provide insight into genetic diversity by determining the rate of homozygous dominant/ recessive or heterozygous variations between individuals. Breaks in Hardy-Weinberg equilibrium will expose any unequal crossing over from chromosome to chromosome.
Faculty Sponsors: Randall James and Steve Fisk
- 23X Zachary Groom. "Bacterial Genome of *Rhodopirellula baltica* in the *Pacifastacus leniusculus* Crayfish."
European Crayfish species like *Acastus Acastus* are becoming increasingly susceptible to infection from Rickettsia-like Organisms such as *Rhodopirellula Baltica*. *R. Baltica* causes death within one week of infection. In order to expand knowledge and understanding of this Endosymbiont the 18S Mitochondrial Region was amplified and sequenced. Crayfish Samples were captured from The Latah Creek Watershed roughly one mile from the Spokane River.

Samples were immediately frozen and kept on ice. Genomic sequence was obtained using a Qiagen DNA extraction protocol. Qiagen DNeasy Blood and Tissue kits were used to extract DNA from Muscle Interstitial Liver Heart Stomach and Gill Tissues. From there the purified and amplified samples were taken through sequencing the results of which were posted to the NCBI Database.

Faculty Sponsor: Steve Fisk

- 23Y Christopher Frick and Rebecca Johnson. "Purification of R Body Proteins RebA, RebB, RebC, and RebD for Structural Studies."

R body proteins are large protein ribbons found in certain endosymbiotic bacteria living within a paramecium host. The essential genes for R body expression in *C. taeniospiralis* are found within a plasmid locus containing four open reading frames: rebA rebB rebC and rebD. BLAST searches of the corresponding encoded proteins determined that RebC has a unique amino acid sequence while RebA RebB and RebD show around 50% identity to other polypeptides of unknown structure. Determination of each Reb protein structure may lead to the discovery of novel structures and expand the protein structure knowledge base. The interaction of Reb proteins is of interest due to the potentially catenated structure of R bodies. Each reb gene has been amplified by PCR and placed into an E. coli expression vector pET14b. Histidine-tagged RebA and RebB were successfully expressed purified and then analyzed for secondary structure by CD spectrapolarimetry.

Faculty Sponsor: Deanna Dahlke Ojennus

- 24A Chelsea Chamberlain. "Media and the Haywood Trial."

On December 30th 1905 Harry Orchard killed ex-governor of Idaho Frank Steunenberg at his front gate. Orchard was arrested but accused prominent union leaders of hiring him to perform the assassination. In the summer of 1907 the national press' attention turned to the trial of the first accused leader Bill Haywood. Journalists flocked to Boise to report the details of the trial to their readers back home. Focusing on the state of Idaho various newspaper publications will be examined for political slant regarding the main characters of the trial Orchard and Haywood as well as the jury's decision to acquit Haywood. . Examining the stories' contents side by side serves as a powerful example of how location influences what kind information a newspaper publishes; this is important to acknowledge beyond the events of 1907 to ensure better historical research and a more balanced understanding of modern day news.

Faculty Sponsor: Corliss Slack

- 24B Taylor Warren. "Vikings on the Bosphorus: Byzantine-Varangian Relations in the Early Middle Ages."

When one looks at the Viking's impact on European history during the eighth through eleventh centuries one is accustomed to focusing primary on Western Europe and the British Isles. Oftentimes overlooked are the Norsemen who traveled eastwards to what would become the kingdom of Kiev or even further still to Constantinople. The Byzantines frequently employed the Norsemen who settled in these areas and primary sources from both cultures tell of the fierce loyalty battlefield prowess and sense of noble savagery that these mercenaries possessed which set them apart from other European peoples. For my oral presentation I hope to explore the intense cultural bond between the Norse and Byzantine Greek cultures and how this bond was unique when compared to other western European groups as well as the degree to which this bond was lost following the 1204 Sack of Constantinople.

Faculty Sponsor: Corliss Slack

- 24C Michael Schultz. "The Traditio of Psalm 50: A Mushite Cult Prophet and A Deuteronomic Hand"
Psalm 50 has been studied repeatedly by form-critics. Yet this method has not sufficiently explained the clear contradictions present in the text of the psalm. Therefore using the methodology of Tradition Criticism this paper proposes for Psalm 50 a conceptual traditum a textual traditum and two further stages of traditio. The conceptual traditum reflects elements from Canaanite mythology and the Ancient Near Eastern personal god. The textual traditum the first written layer is a liturgy written by a Northern Mushite. During the first stage of the traditio the textual traditum moved to Jerusalem where it was redacted by Deuteronomic reformers. This is the canonized version of Psalm 50 found in the MT. During the second stage of traditio Psalm 50 was re-read in the post-exilic period in light of the exile. Distinguishing the layers of traditum/traditio in Psalm 50 explains the origins of the contradictions present in this psalm.
Faculty Sponsor: Scott Starbuck

Special Session 25. *Women and Children Last in Victorian Fiction*

This panel addresses fictional representations of the imperiled state of women and children in Victorian novels by Bram Stoker Emily Bronte and George Eliot.

Faculty Moderator: Pamela Corpron Parker

- 25A Aubrey Cain. "Throwing the Baby Out with the Bathwater: Infanticide in Victorian Literature."
Throughout 19th century literature the reoccurring theme of infanticide was used both for its ability to shock and its capacity to draw attention to other social issues. The specter of infanticide is emblematic of complete moral depravity and when juxtaposed with other issues such as slavery gender divisions and a rejection of maternity the theme of child-murder becomes an emotionally coercive technique used to layer an added element of horror to these social ills. Thus infanticide was used by a variety of authors as a type of rhetoric that emphasized a range of moral failings and advocated a change in society. The use of infanticide in Elizabeth Barrett Browning's "The Runaway Slave at Pilgrim's Point", George Eliot's "Adam Bede" and Bram Stoker's "Dracula" represents the authors' extremist positions on particular social issues connecting the unnaturalness of child-murder to the equally unnatural issues of slavery gender inequalities and the New Women.
Faculty Sponsor: Pamela Corpron Parker
- 25B Caitlin Wheeler. "Children and the Future of Victorian England"
In this essay I use three very different Victorian texts-- Cranford by Elizabeth Gaskell Adam Bede by George Eliot and Dracula by Bram Stoker-- to explore how children in Victorian literature are used to deal with the uncertain future of the authors' England.
Faculty Sponsor: Pamela Corpron Parker
- 25C Teresa Norlin. "Abandon the Young: Exploring the Tie between Public and Familial Injustice in Charles Dickens' *Bleak House*."
This paper examines the systems set up to deal with orphans in London during the 1800's as depicted by Charles Dickens in his novel Bleak House. Dickens points to problems with the judicial system and with social activism highlighting the damaging effect that growing up without a mother will have not only on individuals but on the whole of society by extension. The societal issues Dickens was concerned with remain relevant in our world today.
Faculty Sponsor: Pamela Corpron Parker

- 25D Ben Everett. "Emily Bronte's *Wuthering Heights* and the Victorian Wife's Crisis of Identity."
Biblical and legal authorities of the Victorian era claimed there was but one identity in marriage and that was considered male yet Emily Bronte's *Wuthering Heights* reveals her concern for the lost female identity in the Victorian marriage. This paper examines Bronte's own exploration of the ways in which a wife might attempt to reclaim her identity when married. Thus the married women of *Wuthering Heights* attempt to form their own identities by regressing into childhood identities by attempting to usurp the overarching masculine identity and by separating themselves from their marriages. Each of these identity-reestablishment techniques fails in turn; it is only in the young and book-centric Cathy Linton's impending marriage to Hareton Earnshaw that there is hope she might retain her identity. Bronte therefore suggests that it is only with an identity based in education that the Victorian woman might safely retain her sense of self in marriage.
Faculty Sponsor: Pamela Corpron Parker
- 26A Jessica Valencia. "The High Life."
A journalist's approach to an in-depth look at the history and current trends of prescription drug abuse on college campuses. The issue of prescription drug abuse will be examined on a broader national level as well as on a local level.
Faculty Sponsor: Jim McPherson
- 26B Taylor Zajicek. "The Rhetorical Presidency of Theodore Roosevelt: Imperialism Framed as Duty."
In the late 19th century the phenomenon of the rhetorical presidency forever transformed American political life. The ability of a new breed of politicians to strategically present an agenda proved to be an influential tool in framing their actions in a positive light. One of the most convincing examples of this development was Theodore Roosevelt's framing of American imperialist ambitions as a moral and divine responsibility to democratize the Pacific world. In his rhetoric Roosevelt was able to reconcile apparent paradoxes and secure the support of the nation for expansionism. Through media such as speeches newspaper articles letters and messages to Congress Roosevelt gave his interventionist policies legitimacy by constructing a nationalist racial and moral framework to justify his imperial vision and mold the opinion of the American public. In the process the charismatic Roosevelt created a sense of "national duty" which remains in contemporary political rhetoric.
Faculty Sponsor: Andrew Hogue
- 26C Kyle Novak. "Pseudo-Democracy: A Hypocritical Education."
In 1942 during the Second World War the United States forcibly interned more than 110000 persons of Japanese descent in camps throughout the Western United States. My paper focuses in the impact of internment on the cultural identity of second-generation (Nisei) Japanese Americans. Specifically the paper examines the state of Nisei education in the late nineteenth and early twentieth century. By focusing on the problems Nisei experienced in American educational institutions before the war as well as relocation camp schools during the war the paper reveals the ways in which the relocation process denied Japanese American immigrants the chance to construct a definitive cultural identity. The paper utilizes both secondary and primary sources supporting research facilitated by Whitworth University Library Archives in order to draw these conclusions.
Faculty Sponsor: Dale Soden

Special Session 27. Media Production and Liberal Arts Education

This session will begin with a 20-30 minute screening of video work produced by the students speaking in the session two of whom (Kyle Kim and Ryan Graves) are past Whitworth Student Film Festival winners. The students will then remark individually on their work and on the ways media production has been integral to their undergraduate experience. The session will end with a roundtable discussion moderated by Morgan Feddes (one of the presenters).

Faculty Moderator: Fred Johnson

27A Morgan Feddes, Ryan Graves and Kyle Kim. Short Film Screenings Followed by Discussion. This presentation will include a screening of my short film "I Wonder" which recently won First Place in the short film contest at the Leonard Oakland Film Festival. After the screening I will reflect on the kinds of work that went into creating this film and the ways that media production has been integral to my undergraduate education. My presentation will be part of the "Media Production and the Liberal Arts Panel" which will include a roundtable discussion period with co-panlists.

Faculty Sponsor: Fred Johnson

28A Mary Ann Mediba Ziegler. "Familial Relationships Effects on College Risk Taking Behaviors." This study examines perceived parental warmth and hostility in relation to risk behaviors of college students. A sample of 189 students revealed that paternal hostility correlated strongly with a higher number of risk behaviors in men and women. Maternal warmth was positively correlated with ethical behaviors. These findings suggest that fathers influence risk behaviors into young adulthood.

Faculty Sponsor: Anna Marie Medina

28B Kathryn Bradshaw. "Temporal Orientation Mood and Gender." Temporal orientation involves cognitive involvement in present past or future time. We examined whether gender was predictive of temporal orientation as well as the linkage between state and trait moods and temporal orientation. Results did not support the gender hypothesis but suggested a link between mood and temporal orientation.

Faculty Sponsor: Anna Marie Medina

28C Luke Nofsinger and Molly Ezell. "Emotions and Cognitive Processing." Human emotion constitutes part of the meaningful and interpretive processing of individuals and is significantly integrated into our cognitive constructions of reality. Our own experiences with emotions provide us with information and interpretations of our surrounding environment. Therefore it makes sense that our emotional state would affect how we process new and old information in order to make decisions. This study looks at how our emotional state (specifically low-arousal emotional states) relates to the different modes of cognitive processing. These cognitive processing modes are classified as analytic and associative.

Faculty Sponsor: Anna Marie Medina

28D Makenzie O'Neil and Stephanie Wraith. "Goal Priming Versus Mental Contrasting." We measured perceived goal attainability to determine if priming overrides mental contrasting. Participants were given a negative or neutral prime engaged in a mental contrasting exercise and reported perceived goal attainability and difficulty as well as goal confidence and commitment. Results indicate priming had a significant effect on perceived attainability.

Faculty Sponsor: Anna Marie Medina

- 29A Julia Barnes. "Cross-modal Recognition in Roosters (*Gallus gallus*)."
Cross-modal recognition is the process of using two or more senses to identify other individuals or species. To date no study has identified cross-modal recognition in an avian species. Previous research has shown that fowl (*Gallus gallus*) can recognize other fowl using either auditory or visual cues. Roosters were exposed to two unfamiliar exemplar males for 10 days using a playback setup. On the last 2 days test roosters saw one exemplar then heard either the call of that exemplar or the other one. We hypothesized that the mismatched visual and audio would elicit a startle response exhibited by latency to call number of crows and behavioural responses. Though there was much individual variation among the roosters a strong trend appeared throughout the behavioural responses that revealed a greater startle response to a mismatched audiovisual video than a matched video. These results suggest that roosters use cross-modal recognition.
Faculty Sponsor: Jennifer Clark and K-Lynn Smith
- 29B Chelsea Stone. "Manipulating Brain Electrical Activity during Sleep to Understand Brain Metabolism."
Sleep is a very important property of the brain. Sleep serves several restorative functions such as conserving energy, fighting infectious disease and maintaining mental function through situations in our daily lives. Sleep is characterized by changes in the brain's electrical activity that distinguishes it from wake. We seek to understand the mechanisms and functions of sleep-related changes in brain electrical activity. We have designed a method for manipulating electrical activity in the mouse brain. With this method, called optogenetics, we use a laser to stimulate the brain directly. Glucose is the only metabolic fuel that the brain can use. Conversion of glucose to lactate is a critical step in this metabolic process and may be influenced by sleep related electrical changes. We are using optogenetic stimulation to understand the relationship between the brain's electrical activity during sleep and the use of glucose and lactate as brain metabolic fuels.
Faculty Sponsor: Jonathan Wisor
- 29C Diana David, Amanda Dawson, and Emily Feczko. "Task Switching and Creative Problem Solving."
We compared the effects of massed and spaced performance on creative problem-solving. Participants saw 20 sets of three words taken from the Compound Remote Associates Test a common measure of problem-solving. For each set the task was to think of a word that was related to the three presented words. The sets were presented twice in the same order with a short break in between. In the massed condition the break was 30 seconds and there was no task to perform. In the spaced condition the break was 13 minutes and participants were given puzzle tasks to solve. We hypothesized that participants in the spaced condition would show a greater increase in the numbers of correct responses on the second presentation compared to their counterparts in the massed condition. Results did not support the hypothesis. Massed and spaced presentations had similar effects.
Faculty Sponsor: Gary Thorne
- 29D Tara Stefanoff. "Interpretive Drawing and Reading Comprehension."
The basis of this study is to determine whether students may have better reading comprehension if they draw an interpretive picture rather than write a summary. The results have the potential to help students with recalling important details of a story when asked to summarize in written form. Students will have the opportunity to write a summary of a book that was read to them. The next reading the students will draw an interpretive picture after a

book is read to them. They will be asked to write a summary of both books in the days that follow the reading. When comparing the data the amount of details and the accuracy will be analyzed in order to determine if drawing may help some students with comprehension. On the final trial the students will have a choice whether to draw or write a summary in order for them to be successful.

Faculty Sponsor: Kathryn Picanco

- 30A Katharine Staudinger. "Barriers to Mental Healthcare: An Analysis of the US Military and PTSD." Healthcare in the United States has been a controversial topic over the past decade as Americans have struggled to access the medical care they need. The same controversy and struggle is true of the military healthcare system. Physical injuries are commonplace throughout the military and are therein dealt with accordingly. Injuries that are more difficult to detect and treat are psychological injuries specifically Post-Traumatic Stress Disorder (PTSD). This paper explores some of the complexities deeply embedded within military culture American society and humanity. These complexities create and perpetuate barriers between service men and women and mental healthcare. Though work is being done both by the government and the American public to create a more welcoming environment for PTSD discussion prevention and treatment there is still a great deal to be done both in terms of policy and overall public tolerance.

Faculty Sponsor: John Yoder

- 30B Katie Williams. "Robin Hood and the Monopoly Man." Wouldn't the world be a better place if everyone thought about themselves less? An altruistic society would seemingly result in more equality and justice but self-interest also plays an essential role in producing the greatest common good. Individuals are incapable of genuinely serving others without first understanding and developing their own passions. Recent college graduates especially struggle with how to approach social and economic inequalities in the real world once they have left the theoretical world of academia. When ideals of selflessness conflict with personal interests a sense of moral obligation to help others can discourage young adults from pursuing vocations that they do not perceive to directly benefit those in need. But a person's ability to contribute to society in a meaningful way is not contingent on the immediate utilitarian outcomes of their actions but rather on a level of self-awareness that enables them to live and act authentically.

Faculty Sponsor: John Yoder

- 30C Chelsey Wheeler. "The Humanitarian Influence: Humanitarian NGOs Humanitarian Intervention and Humanitarian Consequences. Can Humanitarian NGOs Encourage States to Intervene? Do They Help or Hurt Local Communities?" Humanitarian interventions are becoming increasingly prevalent in the international community. Humanitarian NGOs in particular often advocate for humanitarian interventions but can they impact a state's decision to conduct an intervention? This presentation argues that humanitarian NGOs can encourage states to intervene in humanitarian emergencies through several different means but this is just one of many international influences and if other political issues are seen to be more pressing NGOs' calls to intervene may go unheeded. Humanitarian influence can also be seen through the on the ground work of NGOs but this influence is not solely a positive one. Issues of neutrality and impartiality affect an NGO's ability to influence a situation on the ground and the idea of a "moral hazard" which suggests that aid can actually

promote or assist conflict is a powerful one. As such the ramifications of an intervention must be considered before an intervention is conducted.

Faculty Sponsor: Michael Treleaven

- 30D Danielle Tackoor. "Living in a Second Gilded Age."
Given the current economic situation in the United States many political scientists and economists argue that society is living in a second gilded age. The rich are getting richer and their outlandish spending has reached a peak while there is a growing gap between the upper class and the lower class. With the middle class many are falling into a class that lower than what they are accustomed to because of the current economic situation that has been building up for the past few years. This paper exemplifies how American society is involved in a second gilded age the problems of today's gilded age compared with the gilded age of the 19th century and what the future holds for many Americans.
Faculty Sponsor: Daniel Bubb

Special Session 31. *From Bees to Buffalo: A Journey into the DNA/Genome Studies*

North Central High School has developed a successful Bioresearch and Technology program in 10 years of operation. This program was started from scratch. We now have students that have been working in the field of genetics and bio-research for 3 years at North Central High School. Students are expected to publish their work and share their work with other peers academics and professionals. As a culminating project -students are doing specific genomic work in the area of Bison and the Bison Bottle-neck - Bee's and bacteria Ameoba's Mule Deer Minnows and Human Alu's. Our students are engaged in in-depth studies that involve sequencing of DNA the amplification of DNA development of their own PCR's as well as the Bee students are studying the various bacteria found in bees.

Faculty Moderator: Steve Fisk

- 31A Forrest Ireland, Lifen Guo, and Marina DeFrates. "The Search for the Last Buffalo."
In the late nineteenth century the Bison population was decimated by both environmental and human factors and in 1888 the population size in Yellowstone National Park dropped below 28 individuals. This bottleneck should have caused a decrease in the diversity of the species but currently there is no evidence to support this. Presently the species has recovered due to government and private intervention. Ancient samples which were collected from various regions throughout North America were ground into a fine powder from which DNA was extracted. In order to determine the difference in genetic diversity between ancient and modern Bison the highly variable mitochondrial D-loop was sequenced from samples ranging from 700 to over 9000 years in age and was compared with NCBI's nucleotide database on modern Bison.
Faculty Sponsor: Steve Fisk and Randall James
- 31B Joseph Lawhead, Nicholas Negretti, Ashley McElroy, and Hailey Markham-Patti. "Development of 16s Bacterial rRNA Sequence Library for *Apis Mellifera*."
The *Apis Mellifera* (European Honey Bee) 16s genomic library has not yet been developed. By establishing this library tracking of populations of honey bees through 16s will shed light into bacterial diversity between various populations of honey bees as well as laying a foundation for future research into bee populations. The 16s sequences were obtained from individual organs (i.e. intestines circulatory system) to more specifically identify the areas of concentration of the bacterium within the bee for future extraction. To reduce the chance of damaging the 16s sequence during recombination into pUC19 the use of restriction enzymes and ligase had to be

eliminated due to unknown target sequence. PCR was used to create and amplify linear pUC19 and to recombine the amplified 16s sequences into the plasmid. Cloning the recombined plasmids into competent ER2267 E. coli via electroporation will allow each distinct 16s fragment to be isolated and sequenced.

Faculty Sponsor: Steve Fisk and Randall James

31C Andrew Wordell and Celena Ward. "SNP Haplotype Analysis for the Identification of *Entamoeba gingivalis*."

Periodontal disease is one of the more common diseases the human can get in their oral cavity. Being one of the more common diseases this give us a reason to look further into it including possible causes. We know that Porphyromonas gingivalis (bacteria) secretes Arginine-Specific Cytenine Proteinase which is one of the leading cause of periodontal disease. It has also been shown that Entamoeba gingivalis (an Amoeba) is often found with P. gingivalis and in patients with periodontal disease. Our study concerns E. gingivalis and if there is any sort of symbiotic relationship between it and P. gingivalis. There is very little know about E. gingivalis genome and there are very few genetic sequences of it. We are exploring the genetic diversity of E. gingivalis using genetic sequencing of several loci and the possibility of P. gingivalis being in a symbiotic relationship with E. gingivalis.

Faculty Sponsor: Randall James

31D Jacob Ecklund, Hannah Roberts, and Alyssa Barton. "An Analysis of Gene Flow within Eastern Washington Mule Deer Using SNP Haplotyping."

Today in Colorado the mule deer population is estimated to be less than 600000 animals which is less than half of the estimated peak population in the 1940s. Similarly California's mule deer population has decreased to half the size it was in the 1950s. The same story continues throughout the mule deer's native habitat; the western United States. With this population decline there is also the potential for a decline in genetic diversity. Using Single Nucleotide Polymorphisms (SNPs) we are looking at diversity within herds and gene flow between herds found in Eastern Washington. We designed PCR / Sequencing primers specifically to target variable regions of the Cytochrome Oxidase I gene and the control region of the mitochondria (D-loop). Deer herd diversity was analyzed using SNP haplotypes and compared to existing databases.

Faculty Sponsor: Randall James

32A Cory Sago. "Relationship Between 40 Yard Sprint Times and Vertical & Broad Jumps among Trained College-Age Athletes."

Sprint speed is widely desired in sports and many athletes train to improve speed. However some athletes are unable to perform sprint training during portions of the year due to unfavorable weather and lack of indoor running facilities. This research analyzes whether two performance tests -vertical and broad jumps- are related to 40-yard sprint times. If relationships exist athletes may be able to train to improve their jumps in order to increase their speed. The data source is from the 2010 NFL Combine. The hypothesis is that vertical jumps have a stronger correlation to 40-yard sprint time than broad jumps. This may be due to shared quadriceps dominance in vertical jumps and acceleration phase (0-20 yards) caused by the forward lean. The broad jump's hamstring dominance is not expected to significantly affect 40-yard time since the "upright" sprint posture that utilizes the hamstrings is not achieved within the 40-yards.

Faculty Sponsor: Matt Silvers

- 32B Kayte Holm, Jordon Hoffnagle and Hannah Hill. "The Effects of Hippotherapy on Children Diagnosed with Cerebral Palsy."
 Objective: To determine the effects of hippotherapy (the movement of a horse as part of a treatment strategy when used by a physical occupational or speech therapist) on the depolarizations of the gastrocnemius in children diagnosed with Cerebral Palsy. Design: An electromyography machine used to read the muscle depolarizations of the gastrocnemius on a child diagnosed with CP both pre and post hippotherapy. Setting/location: Outdoor arena when the weather permitted otherwise an indoor arena was utilized. Subjects: 1 child age 8 diagnosed with Cerebral Palsy participating in the hippotherapy sessions. Results: After hippotherapy the data showed a significant decrease in the frequency and amplitude of depolarizations. Conclusion: Five sessions of hippotherapy resulted in decreased amplitudes of contractions and a decrease in the frequency of contractions of the muscle. Symmetry between the left and right legs improved.
 Faculty Sponsor: Mike Sardinia
- 32C Zennetta Mann. "The Effects of Direct Instruction Flashcards and Strategies on the Ability to Learn and Retain Multiplication Facts."
 The purpose of the present study was to evaluate the effects of Direct instruction flashcard procedure combined with strategies and rewards on multiplication fact accuracy of two elementary school aged students. A single subject replication design across three and four sets of multiplication facts was used to evaluate the outcomes of our intervention. The results indicated improvement in math performance for each participant. The ease of employing DI flashcards in a resource room was discussed.
 Faculty Sponsor: Thomas McLaughlin
- 32D Alex Hymel, Tae-Hun Lee, Brant Woodruff and Stacey Kobes. "Identification and Cloning of PEPX genes in *Lactobacilli*."
Lactobacillus helveticus and *Lactobacillus sanfranciscensus* are bacteria that are natural participants in the process of making swiss cheese and sourdough bread respectively. Studies indicate that individuals with celiac disease are able to eat some sourdough breads possibly due to the Lactobacilli breaking down the gluten peptides into benign products. Many strains of Lactobacilli are known to produce prolyl dipeptidyl aminopeptidases (PEPX) an enzyme capable of hydrolyzing peptide bonds at prolines which are abundant in gluten proteins. To obtain the sequence that codes for the putative PEPX in *L. sanfranciscensus* we have designed primers to clone the gene by PCR using the known sequence of PEPX from *L. helveticus*.
 Faculty Sponsor: Deanna Dahlke Ojennus
- 32E Haley Krueger. "Personality Traits and Emotional States in the Social Setting."
 This study explores the relationship between personality and emotional state by measuring the effect of observing of observing a deviant social action in this case a person stealing and eating a slice of cake. Change in affect was examined alongside the traits of extraversion agreeableness and neuroticism. My two hypotheses addressed change in affect and a potential correlation between participants with higher levels of extraversion and stronger emotional responses to their observation. The first hypothesis was supported since affect was affected by social deviance. However the changes in affect were found in the sample populations characterized by either higher levels of agreeableness or neuroticism rather than extraversion. Potential explanations for the observations relate to social experience as well as the moderation of

negative feelings and outward behavior as suggested by the Theory of Cognitive Dissonance (Festinger 1957).

Faculty Sponsor: Noel Wescombe

- 32F Paul Steenman. "Trematode Diversity as an Indicator of Ecosystem Health in the Inland Northwest."

In freshwater lake ecosystems parasites such as trematodes may prove to be as reliable bio-indicators compared to the traditionally-used method involving aquatic insects. If parasites are present in an ecosystem then one can infer that their respective hosts must also be present; a common first intermediate host may include many species of snails. If parasites serve as reliable indicators of ecosystem health then parasite diversity will match insect diversity between sites impacted by pollution and reference sites. In this investigation snails and insects were collected from several reference and impacted sites in Washington (impacted by agricultural pollution) and Idaho (impacted by heavy metal pollution). Findings show that there was no difference in trematode diversity between impacted and reference sites. However analysis of trematode diversity versus nitrate levels reveals a pattern that suggests trematode diversity may peak at optimum nitrate levels.

Faculty Sponsor: John Shea

- 32G Frances Peterson. "Language Learning Environments."

Providing ELL students with the best possible language environment is essential to the language learning process. The purpose of this study is to look at student language output in mainstream classrooms versus ESL sheltered classrooms. Data collected from two K-6 public schools in Spokane will be used. Observations will be done in 3rd-5th grade mainstream and in ESL sheltered classrooms. Research questions for study include: 1) How often do students interact with students teachers and other classroom members using English in both mainstream and sheltered ESL classroom settings? 2) How often do students initiate the English use between students teachers and other classroom members in the mainstream classroom and in the ESL sheltered classroom? 3) How do teachers and other classroom members perceive students success in the mainstream classroom versus that in the ESL classroom?

Faculty Sponsor: James Hunter

- 32H Kathleen Nollenberger. "Communication Strategies: Co-created Strategies that Address Cultural Mismatch for Communication between Native and Non-native Speakers of English."

During weekly conversation circles with domestic university students at Gonzaga University it was observed that some breakdowns in communication occurred during conversation between the native and non-native speakers. Although Gonzaga's ESL program teaches active listening skills the students often lack communication strategies needed to negotiate breakdowns in communication that are caused by a cultural mismatch or lack of shared information. The methods of data collection include: observations interviews surveys and reflections. This research will help initiate student-created communication strategies that address cultural mismatch and a lack of shared information. As a result the conversation participants will have a deeper understanding of the cultural background of their fellow interlocutors thus lessening the amount of communication breakdowns as well as helping participants to become more aware and empathetic when participating in cross-cultural communication.

Faculty Sponsor: James Hunter

- 32I Delsey Olds. "Substrate preferences of *Palaemon macrodactylus* as studied on San Juan Island." This is an experiment to test the substrate preferences of shrimp specifically *Palaemon macrodactylus*. This organism was extremely abundant near the Friday Harbor docks and in the nearby bay and they were easily gathered with nets and buckets. I tested four substrates; clay traction sand coarse sand and gravel. I hypothesized that *Palaemon* would prefer the finer substrates to the coarser substrates. I put the substrates in pans and lined them up in a seawater table. Next I put four *Palaemon* in the tank for initial observations. I then ran two "actual" experiments similar to the initial trial experiment except with eight shrimp instead of four and with switched substrate order to eliminate variables. I found *Palaemon* prefer the coarser substrates to the finer substrates. If I could expand on this experiment I would test coarser substrates and do many more tests to make sure that the evidence was conclusive. Faculty Sponsor: Craig Tsuchida
- 32J Lennon Von Weller, Kirsten Kelly and Marsetta Flumo. "Probiotics: A Comparative Analysis." Recent increasing interest in the application of probiotics to the human digestive system has prompted the creation and commercialization of numerous products claiming to contain viable and beneficial cultures. Students at Spokane Community College conducted experiments to explore the efficacy of common marketplace probiotic-containing products. The standard plate count technique was used to determine the viable organism load per tablet and results were compared to claims made by each manufacturer. Probiotic brands were also tested for contaminating organisms and for the effects of a simulated human stomach environment on tablet dissolution and organism survival. Faculty Sponsor: Erin Griffin
- 32K Derick Syhlman. "Antimicrobial Properties of Probiotic Microbes." Probiotic bacteria are often administered when normal flora have been disrupted by antibiotic therapy various medical interventions or by a compromised immune system. As probiotic bacteria colonize the human intestine they restore balance and health particularly in the case of diarrheal disease. However the exact mechanisms remain unknown. The human intestine is colonized by a diverse and dynamic microbial community. Despite the fact that many of these organisms remain unknown or are unculturable there are numerous species that are well known and studied. Several of these species were tested for sensitivity to microbes extracted from commercial probiotic brands. Plate inhibition assays were performed to assess the sensitivity of select intestinal microbiota human pathogens and yeast to extracellular compounds secreted by probiotic bacteria. Faculty Sponsor: Erin Griffin
- 32L Matthew Magill. "The Perceptions of Character Traits Based on Gender and Behavior." The present study observed views on gender and offense perception. 149 female and 31 male undergraduates (median age = 20) read a brief autobiographical excerpt in which the author perceived his or her own behavior as offensive and apologized or did not perceive offense. Subsequently participants took a 17-item survey (Cronbach's alpha = .93) on their views (e.g. how respectable the author was). We hypothesized a significant interaction between gender and behavior (gender-congruent behavior rated higher). A two-way ANOVA revealed a significant main effect for gender $F(1,187) = 4.23$ $p = .041$ $\eta^2 = 0.03$ but no other significant effects or difference in views of male and female participants. In conclusion women were rated higher on positive character traits than men regardless of whether or not they apologized. Faculty Sponsor: Patricia Bruininks

- 32M Erin Dickson. "Knockout of a putative methyltransferase gene in *Rhodospirillum rubrum* and its effect on ridoquinone biosynthesis."
Parasitic helminths are a serious global health issue especially in communities with poor water sanitation. They infect lung liver and digestive tissues in humans and livestock. Helminths' anaerobic metabolism requires ridoquinone an electron transport chain carrier. Ubiquinone is a carrier in aerobes namely the hosts which helmiths inhabit. Using the bacteria *Rhodospirillum rubrum* as a model it has been shown that the ubiquinone is the direct precursor for ridoquinone. A methyltransferase enzyme is potentially involved in this conversion. A knockout mutant of *R. rubrum* was constructed from conjugation with *E. coli* containing a pUC21-derived cloning vector. The new plasmid contained two segments of *R. rubrum* chromosomal DNA that flank the methyltransferase gene with a gentamycin resistance marker inbetween in the gene's place. Failure of the mutant strain to anaerobically grow with Gm would confirm methyltransferase's involvement in ridoquinone biosynthesis.
Faculty Sponsor: Jennifer Shepherd
- 32N Luke Meininger and Kittrick Kane. "The effects of caffeine and quercetin in energy drinks on blood pressure and heart rate."
Caffeine is a compound that is frequently found in beverages and supplements. It has a structure similar to adenosine which binds to receptor sites and causes sleepiness. Caffeine occupies the adenosine receptors and block sleepiness effects. Quercetin is a type of antioxidant called flavanoid. It has been shown to lower blood pressure in hypertensive patients but has little effect on non hypertensive patients. The goal of this study was to determine whether a correlation exists between caffeine and quercetin ingestion and change in blood pressure and/or heart rate. Two different amounts of caffeine were administered to subjects as well as one supplement that contained both caffeine and quercetin. Trends of pulse over time indicated that there is no statistically significant correlation between caffeine or quercetin to blood pressure. The trends in the data suggest that high doses of caffeine may be responsible for hypertension. Additionally quercetin may have hypotensive effects.
Faculty Sponsor: Michael Sardinia
- 32O Justin Harrer. "The Effects of Geothermal Activity on Intertidal Biodiversity within the Northern Gulf of Mexico."
Biodiversity research in the Northern Gulf is motivated by the ever increasing destruction of shoreline habitats climate change and high rates of endemism. In an effort to document the effects of geothermal activity on intertidal biodiversity eight replicate one-hundred foot belt transects where taken from varying locations around and away from the geothermal activity located in the intertidal zone. A total of six water samples were also collected; 4 containing samples drawn directly from the geothermal vents and 2 taken from outlying tidal pools. The objectives of this research were to compare species abundance and diversity within the immediate vicinity of geothermal activity to that of outlying areas and to identify the chemical composition of the area's geothermal water. Preliminary findings suggest that the area immediately surrounding geothermal vents supports extensive amounts of primary productivity compared to outlying areas.
Faculty Sponsor: Methea Sapp

- 32P Heidi Dole. "L1 in the L2 classrooms: Impacts and Perceptions."
There has been debate regarding the necessity of promoting L1 usage in a L2 class. Some value the idea of decreasing or abolishing the usage of L1 by language learners to increase the amount of language exposure. (J Eldridge 1996). Much research has shown that the use of L1 in a L2 class can productively impact students' usage and comprehension of languages. (Anton & Dicamilla 1998; Brooks & Donato 1994). The goal of this study is to understand how the use of L1 in classes can productively impact language learners studying a target language through focusing on the effects of L1 usage by students in the classroom and examining the beliefs of teachers and students from various language learning levels through surveys, personal interviews and classroom observations.
Faculty Sponsor - James Hunter
- 32Q Allison Low. "Examination of chimpanzee tool-use."
Adventitious videotape records (from May-July 2010) of chimpanzee interaction with water were analyzed. The chimpanzees live at the Chimfunshi Wildlife Orphanage Trust in Zambia Africa. Videotape analysis focused on using objects to obtain water. Many objects were used including creative use of fruit rinds. Instances suggestive of planning and observational learning are highlighted. This analysis reveals behavioral similarities of tool-use in our sibling species.
Faculty Sponsor: Mark Bodamer
- 32R Alexis Holder, Riley Benoit, Tara Togstad and Graciela Tobar. "Isolation of the Novel Bacteriophage Skipper ROXX Pokie & Gumbie."
Bacteriophage are useful organisms to study because they have an amazing amount of genetic diversity and possess an untold number of novel genes. Based on how much of a variety there is we predicted we would be able to find a novel species of phage. Using an enrichment protocol the novel bacteriophage Skipper ROXX Pokie and Gumbie were isolated from Spokane soil samples. Samples were collected and placed in an enrichment culture with *Mycobacterium smegmatis*. When plated the presence of plaques indicated that we had successfully collected putative species of phage. Electron microscope images were obtained to determine unique morphologies. The final method of differentiating between our phages was performing restriction digests and comparing DNA fragments. Using the results from these experiments the novelty of our phages was concluded.
Faculty Sponsor: Marianne Poxleitner and Kirk Anders
- 32S Monica Schroll, Cayla Boisseranc, Francis Green and Susanne Lacour. "Isolation of Novel Mycobacteriophages Parish Bart Boatsnbros and Sherri5110."
The purpose of this study was to discover novel mycobacteriophages that infect *M. smegmatis* bacteria and to determine if these are genomically unique like previous mycobacteriophages that have been studied. Through enrichment cultures plaque screenings titer-assays and spot tests our phages were isolated from a soil samples in the areas surrounding Spokane and Yakima WA. The phages were concentrated into a high-titer lysate and their genomic DNA purified then digested with restriction enzymes. Gel electrophoresis showed that four novel Mycobacteriophages were isolated: Parish, Bart, Boatsnbros, and Sherri5110.
Faculty Sponsors: Kirk Anders and Marianne Poxleitner

- 32T Taylor Oswald, Kevin Johnston and Mary McAleer. "Plaque Facts: The Phenotypic Expression of Mycobacteriophage and their Visible Lysis."
Bacteriophages are nonliving viruses that parasitize bacteria in order to survive and replicate. Their phenotypic expression can be studied by the plaques or zones of clearance that form on bacterial lawns. Soil samples were collected from Gonzaga University's campus and were grown with *Mycobacterium smegmatis* to isolate bacteriophage. Plaque morphologies consisted of large turbid plaques small clear plaques and large clear plaques. Additionally some phage plaques provided anomalous data such as chained-turbid and pin-sized turbid morphologies potentially caused by the state of bacterial cultures or proteins in the phage themselves. Four dissimilar phages: Schnappi, Princess Consuela Banana Hammock, MonTana and Temazcal were identified using electron microscopy and DNA restriction digests each phage with distinct plaque morphologies. Phage plaques provide phenotypic manifestations of phages' genetic character and are useful in the classification and study of mycobacteriophages.
Faculty Sponsor: Marianne Poxleitner and Kirk Anders
- 32U Sam Gordon, John Culver and Joe Ryan. "Mycobacteriophage Gumbie an addition to genetic diversity in the F1 cluster."
The novel bacteriophage Gumbie was isolated from Spokane soil. The genome was sequenced annotated and determined to be in the F1 cluster. This research comparatively analyzes the genomes of the bacteriophage Gumbie and other F1 cluster phage on the basis of DNA similarities. Analysis revealed extensive similarities between Gumbie and other F1 phage including several identical genes.
Faculty Sponsor: Marianne Poxleitner and Kirk Anders
- 32V Benjamin Giles. "Increasing Code Security and Assisting Testing through Static Analysis and Code Instrumentation."
Many static analysis tools exist which allow users to automatically detect common programming flaws in their code and many of them have an extensible architecture which allows users to define custom rules. New rules added to the Java Static Analysis tool PMD allow the tool to detect known security flaws such as catching generic exceptions and the direct use of sockets in violation of J2EE proper practices. These changes increase the efficacy of the tool in detecting security flaws in software projects compared to other code analysis tools. Experimental data shows an increase in detection capability in open source projects for a minor cost in developing the rules. The cost-to-benefit ratio of adding rules and investing in code analysis tools are examined and viewed through the lens of formal software testing. We explore the effects of instrumenting code through analysis tools to aid debugging and testing. Several approaches for code instrumentation are considered and explained.
Faculty Sponsor: Peter Tucker
- 32W Cory Druffel and Kara Fisher. "The Effects of a Visual Boundary and Contingent Reward System on the On-Task Behavior of a Preschool Student with Developmental Delays."
The purpose of this intervention was to determine the effects of a contingent reward system with visual boundaries on the on-task behavior of a 3-year-old student with developmental delays in a special education preschool. Each time the student was on-task and within the established visual boundary at the end of a fixed interval of time, he was rewarded with a pretzel fish, which was a preferred food for the child. After several weeks of intervention, it was found that the student's on-task behavior improved from a mean of 63.33% in baseline to a mean of 99% by the end of the intervention. The intervention was effective at improving the

target behavior, but was a slight distraction to other classmates. The implementation was cost-effective, preferred by the student, and the teacher especially liked the visual boundaries.

Faculty Sponsor: Betty Williams

- 32X Julianne Smith. "Phase Diagrams of Binary Benzoic Acid Derivative Mixtures by Differential Scanning Calorimetry."
Differential scanning calorimetry was used to identify the eutectic temperatures and mass percent compositions for two binary mixtures: p-aminobenzoic acid + o-chlorobenzoic acid and p-aminobenzoic acid + p-chlorobenzoic acid. The findings suggest that the eutectic point for mixture p-aminobenzoic acid + o-chlorobenzoic acid is around 125°C with a 30% p-aminobenzoic acid composition and the eutectic point for p-aminobenzoic acid and p-chlorobenzoic acid is around 177°C with a 78% p-aminobenzoic acid composition. Phase diagrams were constructed for each mixture. ATR-IR spectroscopy was also performed on eutectic and non-eutectic mixtures and differences between the spectra were identified.
Faculty Sponsor: Karen Stevens
- 32Y Sydney Schneider. "Synthesis Characterization and Investigation of Neuropeptides with Antimicrobial Activities."
Substance P Neurokinin A Bradykinin and Neurotensin are neuropeptides found in the central nervous system. They act on G-protein coupled receptors (GPCR) to regulate the dilation of blood vessels perception of pain the inflammatory process and contraction of smooth muscles. These peptides also exhibit antimicrobial activities which enable them to disrupt membrane structure and/or metabolic pathways of microorganisms to defend against infections. Investigation of the membrane-lytic mechanisms is the goal to determine similarities and differences of these short neuropeptides with different antimicrobial activities. Peptides are synthesized by solid-phase peptide synthesis (SPPS) analyzed with liquid chromatography mass spectrometry (LC-MS) and characterized by circular dichroism (CD) and infrared spectrometry (IR). Progress towards this goal is presented.
Faculty Sponsor: Matthew Cremeens
- 33A Andrew Hamstra. "Return To Play Protocol For An Athlete Sustaining Multiple Concussions Within a Season: A Case Report of a Collegiate Football Player."
Over the past few years the area of Sports Medicine has had an explosion of information concerning the mild traumatic brain injury or concussion which is a frightening and poorly understood injury. Current research has helped healthcare practitioners understand the complex nature of injuries brain injuries and has outlined a protocol for safely returning the athlete back to competition. A problem with the treatment of concussions is that each individual athlete will respond differently after sustaining a concussive blow. Additionally the healthcare practitioner's treatment is made more difficult if the specific circumstances of the athlete's injury do not fit the mold of the textbook concussion treatment protocol. This fall a Whitworth athlete sustained multiple concussions over the course of the football season. The following is a case report outlining the immediate care treatment and the athlete's journey back to the field.
Faculty Sponsor: Todd Sandberg
- 33B Sean Newton and Brady Jensen. "The Bowl Championship Series and Anti-Trust: Does it Break the Law?"
For many years now fans and media following Division 1-A college football have argued regarding the effectiveness and fairness of the chosen post-season system: The Bowl

Championship Series. Recently this frenzy has led to a number of universities and state lawmakers to challenge that the BCS violates antitrust laws by unfairly favoring schools from "Automatic Qualifying" (AQ) conferences. Amateur and professional sports in the United States have had a fascinating relationship with these laws dating back to the 19th century. The purpose of this current study was to explore this relationship to determine what exactly falls under the parameters of the Sherman Act and if the BCS actually constitutes a breach of federal law as opposed to a simple disservice to smaller college football markets. A wide array of evidence exists that from the way teams are picked to be in bowl games to the way that the money from these games is divided a substantial restriction of trade is taking place.

Faculty Sponsor: Roger Park

Special Session 34. *The Economics of Taxes and Alcohol Consumption*

In this session economics students will present original projects completed for the course. One presenter will test whether tax rates effect labor force participation rates. The second presenter will test whether certain college student attributes tend to increase alcohol consumption.

Faculty Moderator: Erica Johnson

34A John Scott. "Economics of Alcohol Consumption."

Alcohol consumption on college campuses occurs quite often. My project looks at student alcohol consumption and other behaviors and characteristics of college students.

Faculty Sponsor: Erica Johnson

34B Brandon Reeves. "Measuring the Effects of Income Taxes on the Labor Force and Government Tax Revenue."

In the mid-1970s Arthur Laffer citing 14th century scholar Ibn Khaldun and famed economist John Maynard Keynes suggested that a government could conceivably experience an increase in government revenue while decreasing the marginal income tax rates. More precisely there exists a tax-revenue maximizing marginal income tax rate somewhere between 0% and 100%. Currently the debate has shifted to consider the effects of income taxes on aggregate output through the labor force. For purposes pertaining to policy decisions in light of economic growth this paper attempts to answer two fundamental questions: (1) to what extent do marginal income tax rates determine (or influence) both government tax revenue and labor force participation rates? and (2) what is the most efficient income tax rate that yields the most desirable labor force participation rates and government revenue?

Faculty Sponsor: Erica Johnson

35A Madelyn Hayes. "The Influence of Social Media on Music Choices and Preferences With Population Members Ages 18 to 24."

Social media sites are revolutionary tools in the use of marketing products. The purpose of this research was to examine the impact social networking sites such as Facebook MySpace and Twitter have on the way that people find music interact with bands and eventually form opinions about those bands. It is important for the many bands who are promoting themselves via social media but also for record labels record stores and other companies who rely on cash flow from music sales and band merchandise. Understanding the impact of social media usage will allow musicians to maximize both the reach of their fan base and the profit from records sales. Through an online survey information was gathered from subjects ages 18 to 24 years about the effectiveness of social media sites as a way to learn about bands and the positive and negative opinions that form as a result.

Faculty Sponsor: Brad Sago

- 35B Megan Fraser. "How Background Music Affects Television Advertisement Retention Among College Students."
- Background music is a prominent aspect of television advertisements today. Music is also one of the favorite pastimes entertainments and passions of many traditional aged college students ages 18 to 23. Music has been shown to change moods and affect the focus of an advertisement as well as possibly enhance the retention of the advertisement in the consumer's mind. This research examined the extent of music as used in advertisements and whether contrasting musical types affect college students' ability to retain advertisements. It is essential that marketers are aware of the power of music to either improve or hinder the effectiveness retention and product image they portray in their advertisements. College students ages 18 to 23 were surveyed using television advertisement samples with different music styles to gather primary research and their remembrance was gauged.

Faculty Sponsor: Brad Sago

- 36A J.W. Trull. "A New Ecological Narrative: Nature, Place, and Capitalism in the Pacific Northwest." Humanity has reached a strategic inflection point in the global fight for environmental justice. In response to the impending ecological distress facing human populations globally this paper outlines the evolution of a stable future for the people of the Pacific Northwest. In an attempt to make clear the metabolic imbalance that has formed in the linkage between human populations and their environments an ecological critique of capitalism is developed to articulate an alternative politics for the PNW. By collapsing the dichotomy between nature and culture this paper forges the basis for a radical environmental ethic grounded in new a narrative that prioritizes place and combats the existing narratives that compose our political cultural and scientific histories. What emerges is a politics of environmental justice and ecological sustainability contra capitalism that critiques traditional conceptions political borders and advocates a system of cross-boundary bioregional management.

Faculty Sponsor: Michael Treleaven

- 36B Shane Fouts. "Ecology in Japan and China Past and Present."
- This paper asks if China can reverse its stance and actions towards the environment and become a "Clean Tiger". This paper also asks if a parallel between China and Japan which historically experienced a similar situation of rapid industrial development and ecological degradation as well as similar concepts of civil society. Fortunately Japan was able to turn around its harmful environmental practices in a relatively short period of time. The general hypothesis is that to prevent and reverse ecological destruction brought about by rapid industrial development a country has to be "rich" enough to support an ecological clean up act that generally begins as a grass-roots movement.

Faculty Sponsor: John Yoder

- 37A Ben Snarski. "Don't You Know Who I Am?! ; Invulnerability and Deviance at an Elite Private Institution"
- From underage drinking to the commission of property crimes college students are notorious for participating in deviant behavior. Little research has linked such behavior to Labeling theory specifically individuals invulnerability related to social perception and status. Invulnerability refers to a person's feeling that authorities cannot or will not be able to hold that individual accountable for their deviant behavior. Feelings of invulnerability lead one to perceive they can

outwit law enforcement or that once caught an individual's status can shield them from being arrested or charged. The hypothesis of this study is that student's social status as a member of an elite private university will increase their feelings of invulnerability towards authority resulting in higher rates of alcohol consumption and deviance. This hypothesis will be examined through an internet administered random sample survey of undergraduates at a private Catholic university in the inland northwest.

Faculty Sponsor: Vikas Gumbhir

- 37B Sarah Brooks Brady. "Sizing up the Battle: Public Defenders and Prosecutors in the Adversarial System."

With the aid of my internship in the Spokane County Public Defender's Office I will analyze the complex relationship that exists between the respective roles of the public defender and the prosecutor. The adversarial system encourages the image of the courtroom to emulate a battleground where contestants fight for victory. This image is both evident and manifested in the news and media's preoccupation with "winning" or "losing." Yet the future of each attorney's career along with their ability to either defend their client or represent the state is affected by their interactions with the opposing side of representation. My paper will explore the factors which encourage a relationship to be built and maintained between the two opposing sides. This paper is primarily composed of ethnographic qualitative research including a great deal of observation which allows a unique inside perspective of attorney-to-attorney relationships as they develop and unfold.

Faculty Sponsor: Vikas Gumbhir

- 38A Rebecca Dodge, Sarah Sagarang, and Katie Fergus. "Gravity" (Performance and Discussion)
"Gravity" is an intertextual performance that was created last semester after conducting research on the topic of addiction. The researchers chose several representative texts to explore the phases and cycles of addiction through performance. The intertextual is composed of a compilation of information from various texts including quotes from *A Million Little Pieces* by James Frey, the steps from the 12-step program dance phrases movement patterns, and an alphabetical list of things that people worldwide are addicted to. The intention of the piece is to create awareness about addictions and to realize that addicts are not necessarily bad people; instead they have become entrapped in a cycle from which it is extremely difficult to return. The intertextual seeks to immerse the audience in the dreadful cycle of addiction to increase empathy and decrease judgment and stigmas surrounding addicts. Following the performance the researchers will conduct a question-answer session.

Faculty Sponsor: Diana Trotter

- 38B Alyssa Hickert. "Caryl Churchill and Second-Wave Feminism in *Top Girls*."
Released in 1982 and embroiled in the feminist movement of the era, Caryl Churchill's play *Top Girls* represents a significant contribution to feminist works of the late twentieth century. Yet to categorically associate Churchill's work with the second-wave feminism emerging from contemporary social and political spheres is to ignore the play's critique of an inherently fragmented movement in which women are forced to struggle against an oppressive system as well as each other. Relying on a central character Marlene to represent the similar plights of her peers, Churchill assesses both the broad and intimate effects of contemporary feminism. In doing so, she elucidates the shortcomings of an individualized, non-social movement that fails to adequately establish success for any one character, and she promotes socialist feminism as an alternative to this system.

Faculty Sponsor: Beth Cooley

- 39A Chris Dorn. "The Harlem Renaissance and La Negritude: Antithesis and Synthesis."
This essay investigates the relationship between the United States' Harlem Renaissance and the French Négritude movement of the early- to mid-20th century. As these two movements take part in the intricately complex history of the African diaspora, this paper approaches the subject from a limited perspective -- namely, in terms of personal friendships between each movement's founders; in terms of literary themes; and in terms of the distinct historical backgrounds of the US and of France. In considering firsthand and secondhand sources, we can note the reciprocal nature of the American and the French Negro movements, Americans finding a refuge from discrimination in France and French finding intellectual inspiration in the writings of black Americans. The essay concludes by considering the two movements' historical influences in light of Hegel's dialectic, identifying the Harlem Renaissance as an antithesis to white domination, and Négritude as a sort of effort at synthesis.

Faculty Sponsor: Bendi Benson Schrambach

- 39B Natalie Douglas. "Barefoot at Dawn: Albert Samain and French Symbolist Poetry."
This presentation centers on literary criticism of French Symbolist poetry in the 19th century, concentrating particularly on the sonnet "J'aime l'aube aux pieds nus" by Albert Samain. Albert Samain was a lesser-known French poet, hidden behind the shadows of artists like Charles Baudelaire and Paul Verlaine. However, his work is a prime example of the Symbolist movement in France and his sonnet "J'aime l'aube aux pieds nus" provides a great point of contrast with the traditional sonnet form. The sonnet may be obscure, but its moving, melancholy beauty and exploration of Symbolist themes make it widely deserving of further exposure, especially to lovers of poetry.

Faculty Sponsor: Bendi Benson Schrambach

- 40A Debi Drake. "Action Research in ESL: IELTS Listening."
This is a proposal for an action research plan designed to find out how to improve students' listening comprehension skills, enhance their performance on the IELTS listening test, and help to promote better learning. This plan is focused on high school-aged students who are in the Fast Track program in our school district. The Fast Track program is for International, second language (L2) students who have graduated in their home countries and have studied English for more than five years so they come to Canada to acquire academic English for the purpose of entering North American, English speaking universities. Listening comprehension is one of the most difficult skills for them to master. As their teacher, I have conducted action research in my classroom in order to make some changes in my teaching, to assist the students to become active listeners, and to improve their overall listening comprehension skills.

Research questions

1. What are the L2 students' initial listening abilities?
2. How do the IELTS listening CDs affect learner confidence and their acquisition of listening skills?
3. What do the L2 students do in developing their own listening skills?
4. How do they become active listeners who can surmise meaning from what they hear and transfer these skills to all academic listening situations?

Faculty Sponsor: James Hunter

- 40B Kevin Kato. "World Englishes and the Non-Native/Native Speaker Dichotomy."

The growing number of English language learners correlates to an increasing number of non-native English speaking teachers (NNEST) and native English speaking teachers (NEST). Despite the 1991 anti-discrimination statement published by the TESOL organization and the works of scholars in the field (e.g., Braine, 1999; Llorca, 2005; Mahboob 2010), NEST biased hiring practices and the marginalization of NNESTs continue. This study investigates students' and teachers' perceptions (as well as NNESTs' self-perceptions) and attitudes towards NNESTs and NESTs in an ESL program in the US. Data gathered by questionnaires and personal interviews addresses some stereotypes surrounding NNESTs and NESTs, e.g., NNESTs viewed as grammar gurus who can better offer insight and teaching strategies from their experience as learners and NESTs as the sine qua non for pronunciation models. This study aims at better defining the field by providing students with qualified teachers.

Faculty Sponsor: James Hunter

Student Presenters (with presentation numbers)

Samantha Agopsowicz (Gonzaga) - 1B
Corinne Ankenbruck-Keogh (Gonzaga) – 21B
Andrea Ansari (Whitworth) – 23T
Mika Aoyama (Gonzaga) – 23C
Stephanie Baker (Whitworth) – 7B, 17C
Chelsea Barbiero-Kitts (Gonzaga) – 23I
Julia Barnes (Whitworth) – 29A
Alyssa Barton, (North Central H.S.) – 31D
Riley Benoit (Gonzaga) – 32R
Samantha Blake (Gonzaga) – 7B
Cayla Boisseranc (Gonzaga) – 32S
Julia Bovee (Whitworth) – 13B
Kathryn Bradshaw (Gonzaga) – 28B
Sarah Brooks Brady (Gonzaga) – 37B
Carl Buher (Gonzaga) – 8C
Amanda Burnett (Whitworth) - 6A
Arlana Byers (WSU) – 23J
Aubrey Cain (Whitworth) – 22B, 25A
Monica Calderon (Whitworth) – 17B
Emily Campbell (Whitworth) – 23E
Erinleigh Caughron (Gonzaga) – 7D
Chelsea Chamberlain (Whitworth) – 24A
Christina Chea (Whitworth) – 13A
Callie Chestnut (Whitworth) – 16B
Ariella Chi (Whitworth) – 6D
Christopher Colvin (Whitworth) – 23N
Christine Clenin (Gonzaga) – 23B
John Culver (Gonzaga) – 32U
Hayley Dannettell (Whitworth) – 16D
Diana David (Gonzaga) – 29C
Derek Davis (Gonzaga) – 8D
Amanda Dawson (Gonzaga) – 29C
Jacob DeBorde (Gonzaga) – 8B
Marina DeFrates (North Central H.S.) – 31A
Tyler Dennis (North Central H.S.) – 23W
Erin Dickson (Gonzaga) – 32M
Annie Didier (Whitworth) – 4A
Kimberly Dix (Whitworth) – 23A
Rebecca Dodge (Whitworth) – 38A
Heidi Dole (Gonzaga) – 32P
Kalah Dooley (Gonzaga) – 18A
Josiah Donor (Whitworth) – 9B
Chris Dorn (Whitworth) – 39A
Emily Dossey (Whitworth) – 23A

Natalie Douglas (Whitworth) – 39B
Debi Drake (Gonzaga) – 40A
Cory Druffel (Whitworth) – 32W
Corey Dugan (Whitworth) – 3A
Jack Dunbar (Whitworth) – 7A
Jacob Ecklund (North Central H.S.) – 31D
Ben Everett (Whitworth) – 25D
Molly Ezell (Gonzaga) – 28C
Emily Feczko (Gonzaga) – 29C
Morgan Feddes (Whitworth) – 27A
Katie Fergus (Whitworth) – 38A
Kara Fisher (Whitworth) – 32W
Marsetta Flumo (SCC) – 32J
Sarah Flynn (Whitworth) – 23Q
Shane Fouts (Whitworth) – 36B
Mark Franklin (Whitworth) – 4C
Megan Fraser (Whitworth) – 35B
Christopher Frick (Whitworth) – 23Y
Cary Frick (Whitworth) – 23F
James Fronk (Whitworth) – 23H
Nathan Gelinias (Whitworth) – 11C
Aryn Gessel (Whitworth) – 17A
Benjamin Giles (Whitworth) – 32V
Sarah Glady (Whitworth) – 14D, 22A
Sam Gordon (Gonzaga) - 32U
Michael Gray (Gonzaga), 18C
Ryan Graves (Whitworth) – 27A
Francis Green (Gonzaga) -32S
Zachary Groom (North Central H.S.) – 23X
Cullen Grow (Whitworth) – 19A
Lifen Guo (North Central H.S.) – 31A
Paula “Pax” Gutierrez-Neal (Whitworth) – 2B
Jamie Haddock (Gonzaga) – 19B
Nicole Hamlin (North Central H.S.) – 23W
Ben Hamming (Whitworth) – 23P
Andrew Hamstra (Whitworth) – 33A
Justin Harrer (SCC) – 32O
Angela Hartley (Whitworth) – 20A
Madelyn Hayes (Whitworth) – 35A
Whitney Hedgpeth (Gonzaga) – 17D
Alyssa Hickert (Gonzaga) – 38B
Hannah Hill (Whitworth) -32B
Jordan Hoffnagle (Whitworth) – 32B
Alexis Holder (Gonzaga) – 32R
Kayte Holm (Whitworth) – 32B
Marshall Hurson (Gonzaga) – 9A
Elizabeth Hughes (Gonzaga) – 1A

Dieu Huynh (North Central H.S.) – 23L
Alex Hymel (Whitworth) – 32D
Forrest Ireland (North Central H.S.) – 31A
Brady Jensen (Gonzaga) – 33B
Rebecca Johnson (Whitworth) – 23Y
Kevin Johnston (Gonzaga) – 32T
Stephanie Jordan-Thompson (Gonzaga) – 15C
Kittrick Kane (Whitworth) – 32N
Kevin Kato (Gonzaga) – 40B
Kirsten Kelly (SCC) – 32J
Rachel Kelly (Whitworth) – 13C
Kyle Kim (Whitworth) – 27A
Hannah Kinnier (Whitworth) – 16A
Stacey Kobes (Whitworth) – 32D
Chelsea Komar (Gonzaga) – 10C
Katelin Knox (Whitworth) – 5B
Haley Krueger (Whitworth) – 12B, 32E
Susanne Lacour (Gonzaga) – 32S
Bridger Landle (Whitworth) – 14C
Joseph Lawhead (North Central H.S.) – 31B
Tae-Hun Lee (Whitworth) – 5A, 32D
Allison Low (Gonzaga) – 32Q
Brandon Lowe (Whitworth) – 4B
Max Magee (Gonzaga) – 8B
Matthew Magill (Whitworth) – 32L
Diana Mallon (Gonzaga) – 20C
Jessica Mangundayao (Gonzaga) – 23B
Zennetta Mann (Gonzaga) – 32C
Sarah Marken (Whitworth) – 5C
Hailey Markham-Patti (North Central H.S.) – 31B
Ryan Mathis (Gonzaga) – 8D
Andrew Matsumoto (Gonzaga) – 8D
Mary McAleer (Gonzaga) – 32T
Jacob McCallum (Whitworth)- 23V
Ashley McElroy (North Central H.S.) – 31B
Desiree McIntire (Whitworth) – 13D
Luke Meininger (Whitworth) – 23M, 32N
Trent Millin (Whitworth) – 23K
Skye Miner (Gonzaga)- 20D
Rachel Mitchell (Whitworth) – 17D
Jessica Monroe (Gonzaga) – 8D
Wade Muncey (Whitworth) – 23K
Tayler Mustion (Gonzaga) – 18B
Nicholas Negretti (North Central H.S.) – 31B
Isabel Nelson (Whitworth) – 14B
Sean Newton (Gonzaga) – 33B
Luke Nofsinger (Gonzaga) – 28C
Kathleen Nollenberger (Gonzaga) – 32H

Teresa Norlin (Whitworth) – 25C
Kyle Novak (Whitworth) – 26C
Delsey Olds (Whitworth) – 32I
Stefoni Olmstead (Gonzaga) – 23C
Makenzie O'Neil (Gonzaga) – 28D
Taylor Oswald (Gonzaga) – 32T
Olivia Owen (Gonzaga) – 10A
Frances Peterson (Gonzaga) – 32G
Kevin Pierce (Gonzaga) – 10A
Antone Pierucci (Gonzaga) – 21C
Greg Postlewaite (Gonzaga) – 8C
Amanda Ramey (Whitworth)- 20B
Chez Ratum (Gonzaga) – 9A
Jaime Rebuelta (Whitworth) – 11A
Brandon Reeves (Gonzaga) – 34B
Heidi Renstrom (Whitworth) – 23Q
Leslie Richter (Whitworth) – 2D, 22C
Hannah Roberts (North Central H.S.) – 31D
Karen Robison (Whitworth) – 22D
Fatima Rodriguez (Whitworth) - 12A, 12B
Marc Rollins (Whitworth) – 23P
Joe Ryan (Gonzaga) – 32U
Sara Sagarang (Whitworth) – 38A
Cory Sago (Gonzaga) – 32A
Andreas Samus (Whitworth) – 6C
Sydney Schneider (Gonzaga) – 32Y
Monica Schroll (Gonzaga) – 32S
Michael Schultz (Whitworth) – 24C
John Scott (Gonzaga) – 34A
Elizabeth Seccomb (Whitworth) – 16C
Katie Seevers (Whitworth) – 3C
Natalie Sego (Whitworth) – 2A, 15A
Dori Simpson (EWU) – 12C
Adam Skarr (Gonzaga) – 10B
Ethan Smith (Whitworth) – 23D
Jonathan Smith (North Central H.S.) – 23L
Julianne Smith (Whitworth) – 32X
Rhylee Smith (Whitworth) – 19C
Ben Snarski (Gonzaga) – 37A
Carlee Snider (Gonzaga) – 23R
Katharine Staudinger (Whitworth) – 30A
Paul Steenman (Gonzaga) – 32F
Tara Stefanoff (Whitworth) – 29D
Kyle Stevenson (Gonzaga) – 3B
Chelsea Stone (Gonzaga) – 7D, 29B
Dina Storozhenko (North Central H.S.) – 23W
Kayla Strahm (Whitworth) – 23G
Jocelyn Swalm (Whitworth) – 6B

Derick Syhlman (SCC) – 32K
Danielle Tackoor (Gonzaga) – 30D
Ace Taylor (Whitworth) – 23O
Sydney Taylor (Gonzaga) – 21A
Nathan TeGrotenhuis (Whitworth) – 9C
Graciela Tobar (Gonzaga) – 32R
Tara Togstad (Gonzaga) – 7C, 32R
Sabrina Topacio (Gonzaga) – 9A
J.W. Trull (Gonzaga) – 36A
Sydney Ulliman (Gonzaga) – 8C
Jessica Valencia (Whitworth) – 26A
Trista Van Berkum (Whitworth) – 17B
Krista Van Dyke (Gonzaga) – 1C
Lennon Von Weller (SCC) – 32J
Elizabeth Wall (Whitworth) – 11B
Celena Ward (North Central H.S.) – 31C
Taylor Warren (Whitworth) – 24B
Michael Weidemann (Whitworth) – 23S
Angela Weiss (Gonzaga) – 8D
Caitlin Wheeler (Whitworth) – 2C, 14A, 25B
Chelsey Wheeler (Gonzaga) – 30C
Jacquelyn Wheeler (Whitworth) – 15B
Thomas Whitt (Gonzaga) – 8A
Taylor Willi (Whitworth) – 23U
Katie Williams (Whitworth) – 30B
Brant Woodruff (Whitworth) – 32D
Andrew Wordell (North Central H.S.) – 31C
Stephanie Wraith (Gonzaga) – 28D
Taylor Zajicek (Whitworth) – 26B
Colin Zalewski (Whitworth) – 17A
Mary Ann Mediba Ziegler (Gonzaga) – 28A

Faculty Sponsors and Moderators

Kirk Anders - Biology, Gonzaga

Laura Bloxham - English, Whitworth

Mark Bodamer - Psychology, Gonzaga

Patricia Bruininks – Psychology, Whitworth

Daniel Bubb – Political Science, Gonzaga

Frank Caccavo - Biology, Whitworth

Jillian Cadwell – Civil Engineering, Gonzaga

Matthew Cremeens – Chemistry & Biochemistry, Gonzaga

Jennifer Clark – Animal Communication - Macquarie University (Sydney, AUS)

Beth Cooley - English, Gonzaga

Paul DePalma – Computer Science, Gonzaga

Steve Fisk, North Central High School

Mike Fulton – Modern Languages, Whitworth

Dr. Sara Ganzerli – Civil Engineering, Gonzaga

Richard Goodrich - History, Gonzaga

Erin Griffin - Arts & Sciences, SCC

Vikas Gumbhir – Sociology, Gonzaga

Kim Hernandez – Spanish, Whitworth

Craig Hinnenkamp – Economics & Business, Whitworth

Andrew Hogue – Political Science, Whitworth

Donelle Howell – Nursing, WSU

James Hunter - ESL, Gonzaga

Randall S. James, North Central High School

Erica Johnson - Economics, Gonzaga

Fred Johnson – English, Whitworth

Kent Jones – Computer Science, Whitworth

Susan Mabry – Computer Science, Whitworth

Jim McPherson – Communication Studies, Whitworth
Thomas McLaughlin – Education, Gonzaga
Anna Marie Medina – Psychology, Gonzaga
Alan Mikkelson – Communication Studies, Whitworth
Leslie Norman – Modern Languages, Whitworth
Deanna Ojennus – Chemistry, Whitworth
Shannon Overbay - Mathematics, Gonzaga
Pamela Corpron Parker – English, Whitworth
Roger Park - Education, Gonzaga
Kathryn Picanco – Education, Whitworth
Donna Pierce – Mathematics, Whitworth
Finn Pond – Biology, Whitworth
Marianne Poxleitner - Biology, Gonzaga
Jane Reinhart - Sociology, Gonzaga
Michael Rempe – Mathematics & Computer Science, Whitworth
Heather Clark Easterling Ritchie - English, Gonzaga
Katey Roden – English, Whitworth
Natalia Ruiz-Rubio – Spanish, EWU
Brad Sago - Economics & Business, Whitworth
Todd Sandberg – Kinesiology & Athletics, Whitworth
Kamesh Sankaran – Physics, Whitworth
Methea Sapp - Arts & Sciences, SCC
Mike Sardinia- Biology, Whitworth
Richard Schatz - Business & Economics, Whitworth
Bendi Benson Schrambach – French, Whitworth
John Shea, S.J. - Biology, Gonzaga
Nicole Sheets – English, Whitworth
Julia Shepherd – Chemistry & Biochemistry, Gonzaga

Matt Silvers – Health Sciences, Whitworth

Corliss Slack – History, Whitworth

K-Lynn Smith - Communication & Cognition - Macquarie University (Sydney, AUS)

Dale Soden – History, Whitworth

Melissa Sprengle – English, Whitworth

Scott Starbuck –Theology, Whitworth

Karen Stevens - Chemistry, Whitworth

Julia Stronks – Political Science, Whitworth

Doug Sugano – English, Whitworth

Gary Thorne - Psychology, Gonzaga

Michael Treleaven – Political Science, Gonzaga

Diana Trotter – Theatre, Whitworth

Craig Tsuchida – Biology, Whitworth

Peter Tucker – Computer Science, Whitworth

Kimberly P Weber – Special Education, Gonzaga

Noel Wescombe – Psychology, Whitworth

Betty Fry Williams - Special Education, Whitworth

Randall L. Williams - Special Education, Gonzaga

Jonathan Wisor – Health Sciences, WSU

John Yoder – Political Science, Whitworth

