

2017

2017 Student Research and Creative Works Symposium Program

Eastern Washington University

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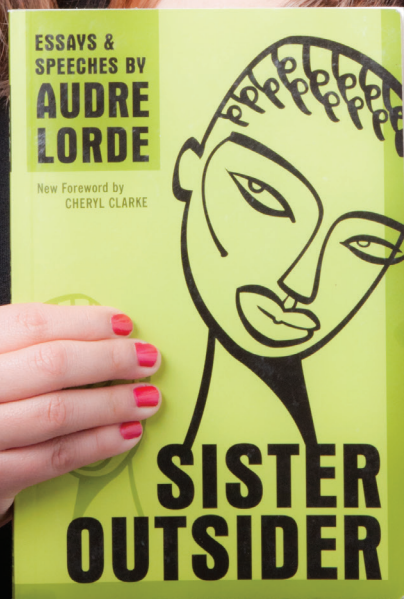
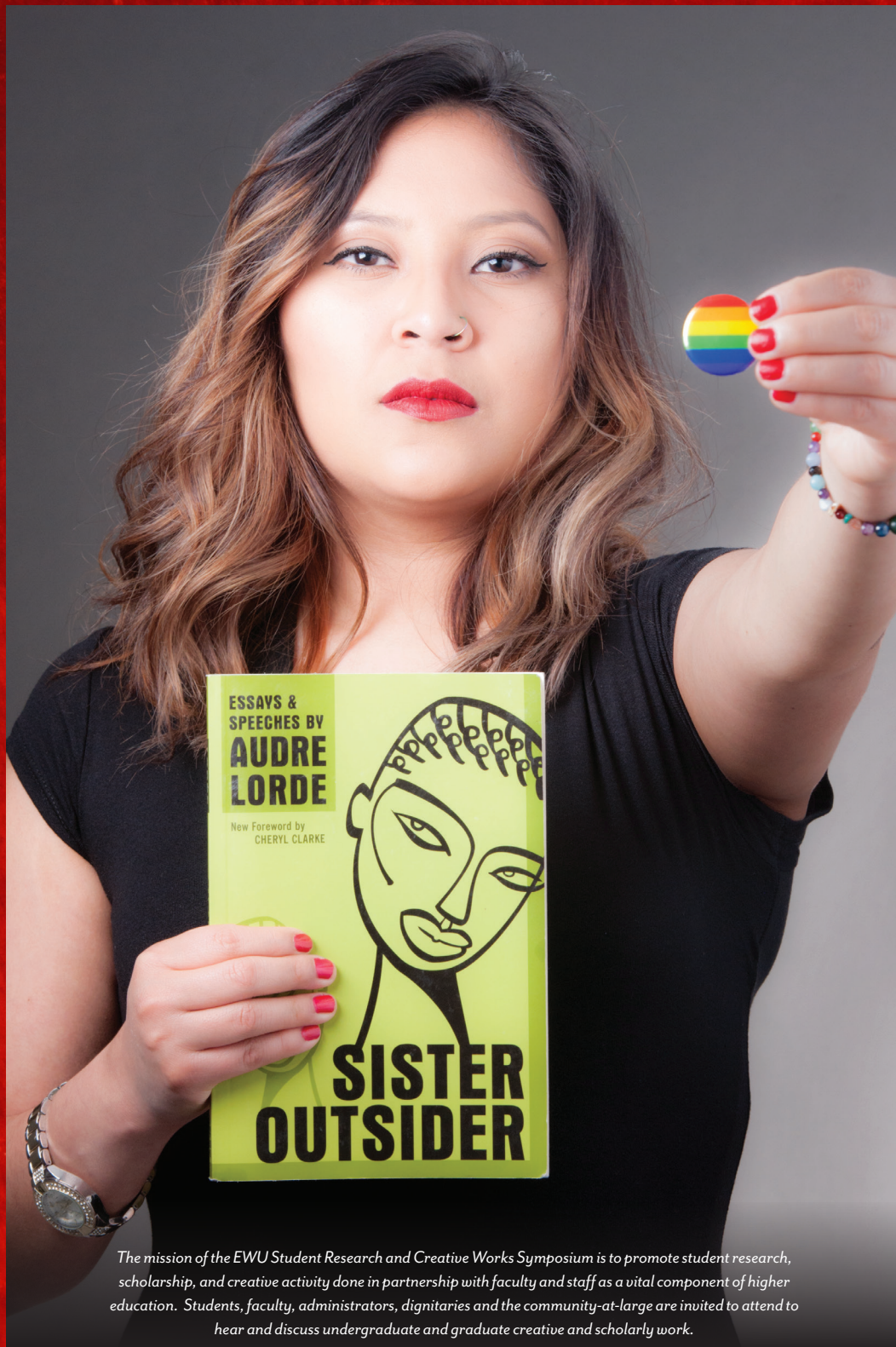
EWU | Student Research and Creative Works

SYMPOSIUM

20th
ANNIVERSARY

MAY 16-17
2017

Over 500
Presenters



MAY 15TH
S.M.A³.R.T. FACULTY &
STAFF POSTER SESSIONS
HARGREAVES READING
ROOM
4:30PM – 8PM

MAY 16TH
STUDENT CREATIVE
WORKS
EWU FINE ARTS COMPLEX
4:30PM – 8PM

MAY 17TH
STUDENT RESEARCH
HARGREAVES & SENIOR
EWU CHENEY CAMPUS
8AM – 4PM

MAY 17TH
AGING POLICY FAIR
SENIOR HALL LOUNGE
10AM-11:30AM / 2PM – 4PM

*"The eye sees
only what the
mind is prepared
to comprehend."*

-Robertson Davies,
Tempest-Tost

The mission of the EWU Student Research and Creative Works Symposium is to promote student research, scholarship, and creative activity done in partnership with faculty and staff as a vital component of higher education. Students, faculty, administrators, dignitaries and the community-at-large are invited to attend to hear and discuss undergraduate and graduate creative and scholarly work.





EWU | RESEARCH & CREATIVE WORKS SYMPOSIUM

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Welcome to the Student Research and Creative Works Symposium

As an Associate Dean of the University College, I would like to welcome you to this year's symposium week. Here at Eastern Washington University, undergraduate/graduate research and creative works take center stage each spring as we celebrate the collaborative work of students and faculty. This symposium brings together some of our brightest and most talented young scholars and artists; we congratulate you on all you have accomplished.

A great deal of effort goes into an event of this magnitude. The university is grateful for the tremendous dedication of faculty and staff mentors and the work of EWU's Student Research and Creative Works Symposium committee. We hope that you will take the opportunity to not only share your own research or creative works, but also participate fully in this Symposium by attending other presentations, creative performances and exhibits, and the keynote presentation.

Undergraduate/graduate research is considered a high impact practice initiative. One of its foremost benefits is the mentoring relationship established between students and faculty to provide advanced opportunities for learning. It is this relationship and the commitment of the faculty mentors that make these projects such an important part of student success. Additionally, it is well-recognized that participation in the arts lends itself towards enhanced critical thinking, communication and creativity. Thank you – faculty - for everything you do to support both of these areas.

We are excited you are here and hope you take full advantage of the opportunities to network with, and learn from, the presentations and performances of your fellow students and peers.

Sincerely,

A handwritten signature in black ink, appearing to read 'C. Lopez'.

Dr. Charles Lopez
Associate Dean
University College

Learning Outcomes for EWU's Student Research and Creative Works Symposium

By attending and presenting research/creative works to a wider audience students will:

1. Think critically about their learning experiences.
2. Demonstrate increased confidence in their ability to perform academically or artistically.
3. Express the importance of sharing research critical to our community, nation, and world, and give examples of ways that creative works contribute to society as well as personal growth.
4. Identify gains in core literacy skills (Ex: thinking critically, quantitative reasoning, public presentations or performances).

DAY ONE FACULTY & STAFF S.M.A.₃.R.T.

Monday May 15th, 2017

[4:30 – 8:00 p.m.]

Hargreaves Hall, Walter and Myrtle Powers Reading Room

4:30 p.m. Welcome & Presenters Check-In Begins

4:30 – 7:30 p.m. Appetizers and Refreshments

4:30 – 8:00 p.m. Poster Presentations

DAY TWO STUDENT CREATIVE WORKS

Tuesday May 16th, 2017

[4:30 – 8:00 p.m.]

Fine Arts Complex

4:30 p.m. **Welcome & Presenters Check-In Begins:** *Art Building, Lobby & Entrance*

4:30 – 7:30 p.m. **Appetizers and Refreshments:** *Art Building, Lobby*

4:30 – 8:00 p.m. **Art and Design Exhibits:** *Art Building, Gallery & Lobby*

5:20 – 6:00 p.m. **Music Composition Presentations:** *Art Building Gallery*

5:30 – 6:00 p.m. **Theatre Presentations:** *University Theatre*

6:00 – 7:30 p.m. **Creative Writing Presentations:** *Art Building Auditorium Room 116*

6:00 – 8:00 p.m. **Film Presentations:** *Radio-Television Building, Room 123*

DAY THREE STUDENT RESEARCH

Wednesday May 17th, 2017

[8:00 a.m. – 5:00 p.m.]

Senior & Hargreaves Hall

7:30 a.m.	Presenter Check-In Begins:	<i>Senior Hall Entrance</i>
7:30 a.m. – 3:00 p.m.	Information Tables:	<i>Senior Hall Lobby</i>
8:30 a.m. – 11:30 a.m.	Morning Oral Presentations:	<i>Senior Hall Classrooms</i>
8:30 a.m. – 9:45 a.m.	Morning Poster Presentations I:	<i>Hargreaves Reading Room</i>
10:15 a.m. – 11:30 a.m.	Morning Poster Presentations II:	<i>Hargreaves Reading Room</i>
10:00 a.m. – 11:30 a.m.	Aging Policy Fair Posters:	<i>Senior Hall 2nd Floor Lounge</i>

Luncheon & Keynote

Reese Court Pavilion

12:00-1:30 p.m.

Opening remarks from Dr. Chuck Lopez, *Associate Dean, University College*

Introduction by Dr. Nick Jackson, *Professor of Psychology and Department Chair*

Keynote Address by Dr. Amani El-Alayli, *Professor of Psychology*

Senior & Hargreaves Hall

2:00 - 4:00 p.m.	Aging Policy Fair Posters:	<i>Senior Hall 2nd Floor Lounge</i>
2:00 – 5:00 p.m.	Afternoon Oral Presentations:	<i>Senior Hall Classrooms</i>
2:00 – 5:00 p.m.	Afternoon Poster Presentations III:	<i>Hargreaves Reading Room</i>



Aging Policy Fair

May 17th – Senior Hall Lounge

10:00 – 11:30 a.m.

and

2:00 – 4:00 p.m.

TOPICS

- Housing
- Ageism
- Discrimination
- Mental Health
- Aging-in-Place
- Trauma
- Rural Aging
- Access to Healthcare
- Dementia Spirituality/Religion
- Sexuality
- Aging Policy
- Health Disparities
- Health Coaching
- Lowering ER Visits
- Safe Neighborhoods
- Disabilities
- Age-Friendly Communities
- Fraud/Financial Abuse

2017 Inspiration Quote

“The eye sees only what the
mind is prepared to
comprehend.”

– *Robertson Davies, Tempest-Tost*

The mission of the EWU Student Research and Creative Works Symposium is to promote student research, scholarship, and creative activity done in partnership with faculty as a vital component of higher education.

Given the current contentious political and social climate, it seems imperative that we all understand that we may have automatic and unconscious biases that influence our judgments. Such biases can influence our judgments of people, whether it be liberals/conservatives, members of stigmatized groups, or even ourselves.

This year, the Symposium Planning Committee chose the quote above in order to emphasize the tendency for all people to exhibit biases, and to highlight the fact that we can educate ourselves to recognize, and ideally reduce, our own biases. One must recognize one's flaws before they can be corrected. It is our mission this year to motivate people to take on this challenge.

Symposium Sponsors

EWU University College, Spokane Teachers Credit Union, Washington State Opportunity Scholarship, Ronald E. McNair Scholars Program, EWU Graduate Studies and Grants & Research Development.

Special Thanks

President Dr. Mary Cullinan

Provost and Vice President for Academic Affairs Dr. Scott Gordon

Keynote Dr. Amani El-Alayli

Faculty Organization President: Jackie Coomes

Department Chair/Professor of Psychology Dr. Nick Jackson

University Graphics: Judy McMillan and Larry Conboy

Multi-Media Commons: Carl Combs and Staff

Records & Registration: Debbie Fockler and Megan Austin

Development: Mike Westfall, Lenore Stark and Lisa Poplawski

Information Technology: Gary Pratt, Dana Simmelink and Daniel Messina

Marketing & Communications: Theresa Conway

Visual Communication Design Eric Galey and Travis Masingale

Transportation Services: Scott Buck and Team

Dining Services: Tom Shaffer and Mandy Rainey

Printing Services and Eagle Sound

Spokane Teachers Credit Union

For their generous donation and continued support

Washington State Opportunity Scholarship

For their donation and commitment to EWU student success

**To all the students, mentors, faculty & volunteers
who have continually worked to make the Symposium a success.**

**If you would like to contribute to the Symposium Foundation;
envelopes are available at the Symposium Office located in 115A Showalter Hall.**

Please make checks payable to: EWU Foundation for Student Research & Creative Works Symposium

Symposium Committee:

The mission of the EWU Student Research and Creative Works Symposium is to promote student research, scholarship, and creative activity done in partnership with faculty and staff as a vital component of higher education. Students, faculty, administrators, dignitaries and the community-at-large are invited to attend, hear and discuss undergraduate and graduate creative and scholarly work.

2017 Symposium Committee Members

1. **Drew Ayers**, *Assistant Professor of Theatre & Film*
2. **Gaige Baisch**, *Academic Affairs, Undergraduate ASEWU*
3. **Helen Bergland**, *Faculty Support & Student Learning Assessment Coordinator, Undergraduate Studies*
4. **Sharon Bowland**, *Associate Professor, Social Work*
5. **Jackie Coomes**, *Professor of Math, President of EWU Faculty Organization*
6. **Cynthia Dukich**, *Assistant Director, McNair Scholar Program*
7. **Greg duMonthier**, *Department Chair, Associate Professor, Art*
8. **David Early**, *Director, Recreation Facilities*
9. **Amani El-Alayli**, *Keynote, Professor of Psychology*
10. **Dana Elder**, *Professor and Director of University Honors*
11. **Gail Forsgreen**, *Assistant Director, EWU Writers' Center*
12. **Christina Torres Garcia**, *Director, McNair Scholar Program*
13. **N.M. Awlad Hossain**, *Associate Professor, Engineering & Design*
14. **Ginelle Hustrulid**, *Assistant Professor, Visual Communication & Design*
15. **Jonathan Johnson**, *Professor, Creative Writing*
16. **Sarah Keller**, *Professor, Anthropology*
17. **Chuck Lopez**, *Associate Dean, University College*
18. **Jonathan Middleton**, *Associate Professor of Theory and Composition, Music*
19. **Suzanne Milton**, *Dean of Libraries, Reference & Instruction*
20. **Justin Otto**, *Social Sciences Librarian, Faculty Chair*
21. **Kristina Pfleegor**, *Responder, EWU Writers' Center*
22. **Julia Smith**, *Associate Professor, Anthropology*
23. **Jeffrey Stafford**, *Professor, Communication*
24. **Anna Tresidder**, *Assistant Professor of Health Service Administration*
25. **Mary Jo Van Bommel**, *Administrative Specialist, University College*
26. **Freddy Vega**, *Symposium Coordinator*
27. **Michael Watts**, *Assistant Symposium Coordinator*
28. **Justin Young**, *Assistant Professor, English, Director of English Composition Program and Writer's Center*

Information Tables

Career Services: “Put Your Research to Work” Workshop



You finally presented your Research Project at the Student Symposium after endless hours of researching and experimenting. Now carry your work forward by learning to tailor your research skills and experience to potential employers on your resume. Come to our workshop on May 18th in PAT 140, 12 – 1pm.

Graduate Studies

Students considering advanced study beyond the bachelor’s degree will find information about more than 50 graduate programs offered at EWU, the application process, tuition and financial aid, contacts and deadlines, along with applications for admission. The friendly, professional staff members in the Graduate Studies Office are available to answer questions weekdays from 8 a.m. to 5 p.m. in 206 Showalter Hall, or by phone at 359-6297.

Office of Community Engagement

EWU’s Office of Community Engagement (OCE) connects the university to the wider community through meaningful partnerships in order to enrich student learning, address critical community needs, and foster a culture of civic responsibility and community. Learn more about community engagement and service-learning at EWU and the ways in which the OCE supports students and faculty in this work.

Washington State Opportunity Scholars

The Washington State Opportunity Scholarship helps low and middle-income Washington state residents earn their bachelor’s degrees in the high-demand fields of science, technology, engineering, math and health care.

EWU McNair Scholars

The Ronald E. McNair Post-baccalaureate Achievement Program is to increase the attainment of PhD degrees by students from underrepresented segments of society. Eastern’s McNair program prepares eligible participants for successful doctoral studies by providing opportunities for research or other scholarly activities including summer research internships, tutoring, academic counseling, seminars, and other educational activities designed to assist participants in securing admission to and financial assistance for doctoral enrollment.

The Easterner

The Easterner, the student news organization at EWU, has existed in one form or another since 1916. Not only is it a source of student-oriented content, but it is also a platform for free speech, where students and the surrounding community can debate topics and share in the marketplace of ideas. At The Easterner’s table, participants will find recent issues, information about advertising, and staff that can take your story ideas and answer questions.

Spokane Teachers’ Credit Union (STCU)

The STCU, “core values are a passion for...Integrity, People, Service, Innovation, Education, and Celebration.”



We Congratulate All 2017 EWU Student Research & Creative Works Symposium Participants!

Your curiosity, determination and hard work inspire us!

Through a unique, public-private partnership, Washington state is helping to grow a skilled, homegrown workforce who will foster innovation, drive our economy, and fuel a brighter future through the Washington State Opportunity Scholarship.

Scholars in the fields of STEM (science, technology, engineering and mathematics) and health care can receive up to **\$22,500** in scholarship funding as well as professional development, mentorship and skills-building support.

WASHINGTON STATE
OPPORTUNITY
SCHOLARSHIP

2018-19 Application

Available January.

Learn more at

waopportunityscholarship.org.



EWU's Ronald E. McNair Post-Baccalaureate Achievement Program

Fostering Excellence and Inspiring Awesome



doctoral studies by providing opportunities for research or other scholarly activities including summer research internships, tutoring, academic counseling, seminars, and other educational activities designed to assist participants in securing admission to and financial assistance for doctoral enrollment. McNair research interns work closely with a faculty mentor to produce a scholarly research paper and present their findings at a conference.

This research expectation has created an ongoing partnership between McNair and EWU's Symposium, which was first organized in 1997 by EWU chemistry professor Dr. Jeanne Small. The 1997 Undergraduate Research and Creative Works Symposium consisted of 16 total oral presentations (9 were McNair scholars); 12 poster presentations (4 were McNair Scholars) and two musical performances. In 2001, McNair Director Dr. Karen McKinney (now retired) took over coordination with the support of Dr. Ron Dalla (now retired) and the help of a graduate assistant. Dr. McKinney coordinated the event through 2005 in Monroe Hall, by which time the Symposium had grown to 145 presenters. The Symposium was moved to Senior Hall in 2006, and since then the event has grown to become a marquee event on campus.

Since the first EWU McNair grant was funded in 1995, McNair has worked closely with Eastern faculty to build a research center community where students thrive. Our quest is to continue this partnership with EWU McNair Faculty Mentors, staff, and administrators and continue the transformation of our students.

Since 1995, twenty-seven EWU McNair Scholars have earned doctorates, 137 have earned master's degrees, and 59 are currently enrolled in graduate school. Of those 59 enrolled, 37 are in PhD programs.

As one of eight federally-funded TRiO outreach and student services programs, the goal of the TRiO Ronald E. McNair Post-baccalaureate Achievement Program is to increase the attainment of PhD degrees by students from underrepresented segments of society. Eastern's McNair Program prepares eligible participants for successful

Highlighting Undergraduate Research:

Minerva Zayas: Dr. Jessica Willis

2016-2017

McNair Research Interns and Mentors

Veronica Albrecht: Dr. Andrea Castillo

Ashley Ellison: Dr. Susan Ruby

Ricardo Ely: Dr. Judd Case

Ella McCallidaine: Dr. Todd Hechtman

Edith Melendez: Dr. Shanna Davis

Jennyfer Mesa: Dr. Dick Winchell

David Nguyen: Dr. Kristian Magori

Donya Quarnstrom: Dr. Kelley Cullen

Audel Rosas: Dr. Majid Sharifi

Lidia Velasco: Dr. Michael Zukosky

Minerva Zayas: Dr. Jessica Willis

EWU | Student Research and Creative Works
20th ANNIVERSARY
MAY 16-17 2017
Presenters

MAY 15TH
S.M.A.R.T. FACULTY & STAFF
POSTER SESSIONS
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4:30PM - 8PM

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HARGREAVES & SENIOR
EWU CHENEY CAMPUS
8AM - 4PM

MAY 17TH
AGING POLICY FAIR
SENIOR HALL LOUNGE
10:00-12:00 / 2:00 - 4:00

KEYNOTE
DR. AMANTI EL-ALAYLI
PROFESSOR OF PSYCHOLOGY

The eye sees only what the mind is prepared to comprehend.
-Robertson Davies, *Tempest-Tost*

QUESTIONS? EMAIL: EWUSYMPIOSIUM@EWU.EDU

New McNair Scholars

Ereisa Morales

Alberto "Flex" Beltran

Michelle Abunaja

Mario Aguilar

Arie Gurin

Jaimie Kenney

Christina Ramelow

Travis Stephens

Loni Taber

Kimberly Jones

Monica Villegas

Sandra Espinoza

Josiah Van Edgdom

Beyond Labels and Boundaries: Queer Chicana Individual and Psychological Identity Development

Chicana women experience gender oppression and have actively challenged gender bias since before the start of the Chicano social protest movement (Garcia, 1997). Historically, as Mexican American women and men started working towards equal rights, Chicana women have experienced marginalization because of their voice and gender status. Additionally, queer Chicana women, or women that identify within the LGBTQ+ communities, have been oppressed within the Chicana feminist movement. Minimal research has been performed on the positive psychological identity development of Queer Chicana women. By using a mixed methods approach to challenge general ideas around the LGBTQ+ community and wellbeing, this research seeks ways to serve diverse ethnic and sexual minorities. Highlighting Chicana women's experiences around sexism, culture, and religion, I will be performing in-depth interviews on LGBTQ+ Chicana women that attend Eastern Washington University. As I continue to conduct interviews, I predict that my analysis will bring greater visibility to Queer Chicana women and the diverse ways in which they construct their sex and gender identities. Their narratives will contribute to enriching towards a greater understandings of the ways that Queer Chicanas in the United States frame selfhood.

Key Note Speaker

12:00 – 1:30 p.m.



Amani El-Alayli, PhD, Department of Psychology Professor

Abstract

Dr. El-Alayli will present research on a variety of situations in which people have preconceived impressions of others based on one single group membership. This work examines the stereotypes people have of morning vs. evening people; women vs. men, lesbian vs. heterosexual women, and Muslims vs. Christians. The tendency for people to sacrifice views of others in order to inflate their own self-views will also be discussed.

Biography

Dr. Amani El-Alayli grew up in the Detroit area and then completed her Bachelor's degree at two University of Michigan campuses. She earned her doctorate degree in Social and Personality Psychology at Michigan State University. After completing school, Dr. El-Alayli worked as a Visiting Assistant Professor at University of Florida before joining the Psychology Department of Eastern Washington University in 2003. She primarily teaches courses in social psychology, general psychology, research methods, and statistics.

Over the years, Dr. El-Alayli has worked with dozens of students, as well as some peers, to conduct research on an array of topics such as the effects of using disclaimers (e.g., "I don't mean to sound arrogant, but...") on person perception, and the factors that influence motivation after failure. She has focused most of her research attention on two topics: self-perception biases and stereotyping/discrimination. Specifically, she has published research on positively distorted self-perceptions and the impact they could have on our motivation, our relationships, and even how we perceive our pets. Dr. El-Alayli has also devoted a lot of time examining gender stereotypes, such as the effects of such stereotypes on the athletic performance of women, and students' treatment of their female professors. In addition, she has examined whether a person seeking rental housing may be treated differently depending on that person's apparent religious affiliation. In conducting research on discrimination, Dr. El-Alayli has been specifically interested in understanding the manner in which discrimination can occur unintentionally and emerge in subtle ways that might still influence others.

STUDENT CREATIVE WORKS SCHEDULE

Tuesday May 16th, 2017

[4:30 – 8:00 p.m.]

Fine Arts Complex

4:30 – 8:00 p.m. Session 1: Art Exhibits, Visual Communication & Design
Art Building, Gallery & Lobby

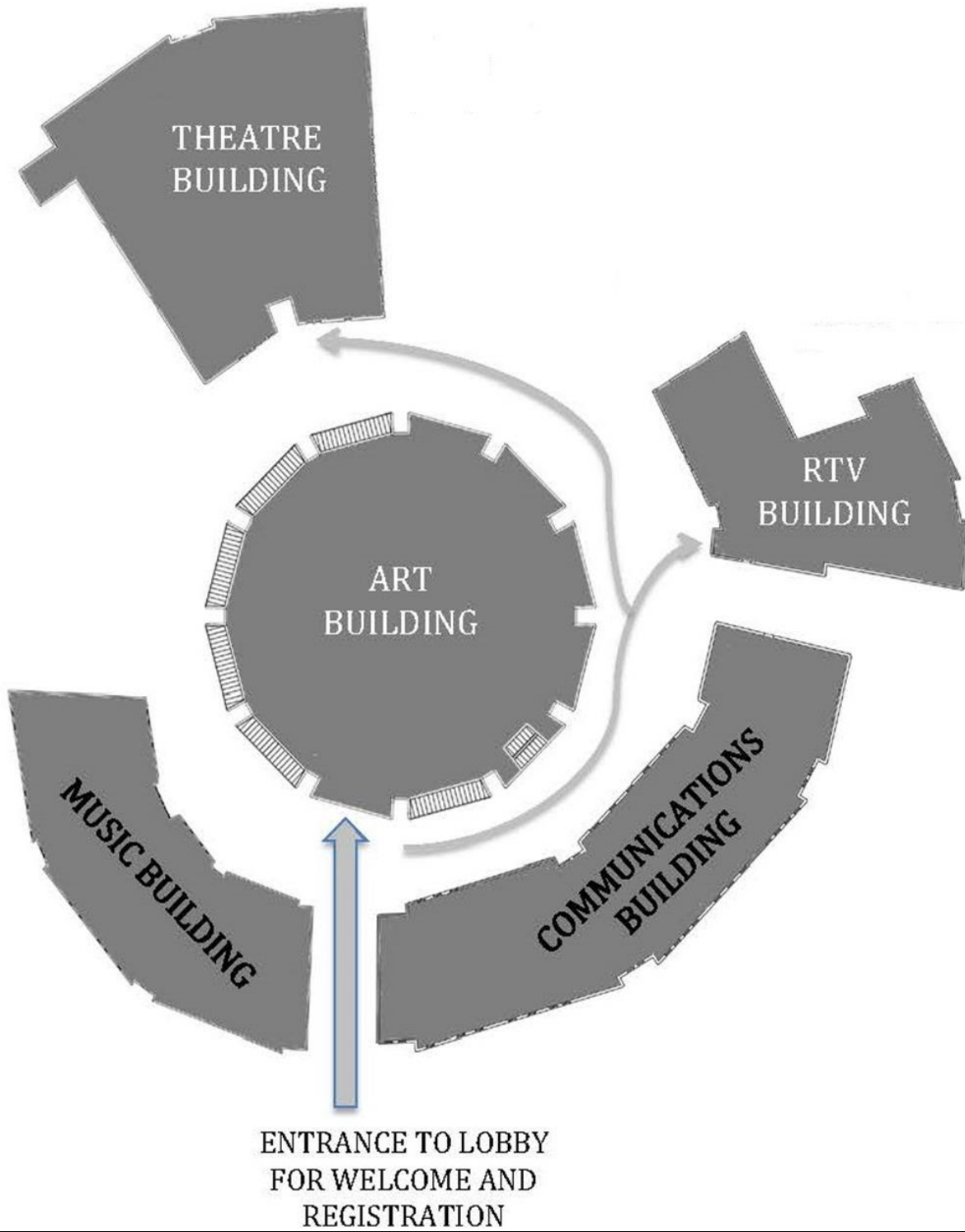
5:20 – 6:00 p.m. Session 2: Music Composition
Art Building Gallery

5:30 – 6:00 p.m. Session 3: Theatre
University Theatre

6:00 – 7:30 p.m. Session 4: Creative Writing Presentations
Art Building Auditorium, Room 116

6:00- 8:00 p.m. Session 5: Digital Media & EWU Film
Radio-Television Building, Room 123

Fine Arts Complex Map



Creative Works Session 1: Art, Visual Communication & Design

Art Building Gallery, 4:30 - 8:00 p.m.

Time	Artist	Title	Mentor
4:30 to 8:00	Amanda Caldwell	<i>The Kitchen</i>	Jenny Hyde
	Rebekah Curtis	<i>All in the Past</i>	Greg DuMontier
	Rebekah Curtis	<i>Exploration</i>	Greg DuMontier
	Carolyn Darjany	<i>Family</i>	Yaro Neils
	Whitney Evans	Inlaid Ceramic Vessels	Chris Tyllia
	Joel Gaytan	<i>First Day</i>	Greg DuMontier
	Darlene Gibson	<i>McKenzie's Metamorphosis</i>	Jenny Hyde
	Travis Knickerbocker	<i>Betrayed by Time</i>	Margot Casstevens
	Stephanie Lunt	<i>Holy is Hot</i>	Jenny Hyde
	Jessa Morissey	<i>Tranquility Pool</i>	Tom Askman
	Katelyn Reed	<i>Complexity</i>	Jodi Patterson
	Marissa Saidy	<i>Revelation</i>	Ginelle Hustrulid
	James Strampher	<i>Revoked</i>	Yaro Neils
	Erik Sullivan	Sculpture	Tom Askman
Katrina Walker	Lidded Jars	Elisa Nappa	

Creative Works Session 2: Music Composition

Art Building Gallery, 5:20 - 6:00 p.m.

Time	Composer	Title	Mentor
5:20	Carl Christensen	<i>Phat, Loud, Heavy Fun</i>	Jonathan Middleton
	Douglas Gade	<i>Symbiosis</i>	Jonathan Middleton
to	Tim Gales	Creating Music from Gaze Tracking Data	Don Goodwin
	Maya Jones	<i>Whole Nuts and Half Nuts</i>	Jonathan Middleton
6:00	Nathan Sumerlin	<i>Contingency</i>	Jonathan Middleton
	Nathan Sumerlin	<i>Heroica</i>	Don Goodwin
	Diana Viskova	<i>Bird of the Red Maple Tree</i>	Jonathan Middleton

Creative Works Session 3: Creative Writing

Art Auditorium (ART 116), 6:00 - 8:00 p.m.

Time	Artist	Title	Mentor
6:00	Lydia Mulligan	“Seeking Home: A Texan’s Story”	Natalie Kusz
	Nahla Hoballah	“Window Gazing”	Rachel Toor
	Rebecca Gonshak	“The Soft Things”	Rachel Toor
	Lisa Laughlin	“Objective Correlative in Creative Nonfiction”	Rachel Toor
to	Readers: Leah Butterwick, Raven Java-McCandless, Rebecca Gonshak	Readings from Northwest Boulevard	Rachel Toor
8:00	Solomon Lovejoy, Tori Harned, Virginia Thomas, Tessa Bryant, Doralicia, Mendoza, Katie Tonellato		

Creative Works Session 4: Digital Media and Film

RTV Building, Room 123, 6:00 - 8:00 p.m.

Time	Author/Filmmaker	Title	Mentor
6:00	Carly Brown, Nicki Hinckley, Kenra Strahm, Zach Pinney, Monica Serpas-Chase	“The Truth”	Chase Ogden
6:15	Rashad Tyson	“Watch Me Disappear”	Chase Ogden
6:30	Sara Corean	“Nosebleed”	Chase Ogden
6:35	Sara Corean, Preston Maughn, Tiernan Osborne, Max Reetz	“Grass Youth Movement”	Chase Ogden
7:00	Milo Harms	“It Goes With Age”	Chase Ogden
7:10	Dustin Meehan	“Mass Accountability”	Chase Ogden
7:30	Chris Jordan	“Ghost Towns”	Chase Ogden
7:35	Calum Akins	“Raccoons”	Chase Ogden

Creative Works Session 5: Theatre

University Theatre Stage, 5:30 - 6:00 p.m.

Time	Presenter	Title	Mentor
6:00 to 8:00	Hazel Bean	A Scene Painting for the Theatre	Shana Joslyn
	Mica Pointer	Literal vs. Figurative: Two Contrasting Approaches to Scenic Design	Shana Joslyn
	Malene Hundley	Soft Flat Scenic Painting	Shana Joslyn
	Skyler Moeder	The Teal Door	Shana Joslyn
	Joshua Baig	KCACTF Package	Sara Goff
	Hazel Bean, Holly Kirkman	Scene Presentation “As It Is In Heaven” by Arlene Hutton	Sara Goff
	John Siebel	“Mime” Autodrama	Sara Goff

Creative Works Session 6: Oral Presentations and Videos

RTV Building, Room 221, 6:00 - 8:15 p.m.

Time	Author	Title	Mentor
6:00	Cindy Chen	Monarchies, Royals and the Lack of Leadership	Charles Lopez
6:15	Jarred Giampietri	Leading with Charisma!	Charles Lopez
6:30	Cierra Thompson	Psychology of the Transformational Leader	Charles Lopez
6:45	Dustin Davis	Historical Approach to Effective Leadership	Charles Lopez
7:00	Kayla D'Aprile	Women Are People First	Elizabeth Kissling
7:15	Megan Jones, Carlisa Williams	Gender Role Representation in Teenage Television Media	Elizabeth Kissling
7:30	Eric Davis	I Am	Katie Peterson
7:45	Sarah Hilsen	Mirror Therapy	Beth Torgerson
8:00	Lisa Veitch	Sechelt	Frederick Strange

STUDENT RESEARCH SESSIONS

Wednesday May 17th, 2017

[8:00 a.m. – 5:00 p.m.]

Senior and Hargreaves Hall

8:00 – 11:30 a.m. Morning Oral Sessions: 1-9

Senior Hall Classrooms

10:00 – 11:30 a.m. Morning Poster Session: 1

Hargreaves Reading Room

10:00 – 11:30 a.m. Aging Policy Fair Posters:

Senior Hall 2nd Floor Lounge

Luncheon & Keynote

Reese Court Pavilion

12:00-1:30 p.m.

Keynote Address by Dr. Amani El-Alayli, *Professor of Psychology*

Senior and Hargreaves Hall

2:00 – 5:00 p.m. Afternoon Oral Sessions: 10-18

Senior Hall Classrooms

2:00 – 3:30 p.m. Afternoon - Poster Session: 2

Hargreaves Reading Room

2:00 – 4:00 p.m. Aging Policy Fair Posters:

Senior Hall 2nd Floor Lounge

Oral Session 1: Biology

Room 101, 8:20 - 11:40 a.m.

Time	Author	Title	Mentor
8:20	Jaimie Kenney	Diversity of Fungal Needle Endophytes of <i>Pinus ponderosa</i>	Suzanne Schwab
8:40	Ashley Bromberg	Efficacy of Using Temperature, Pheromones or Natal Stream Water to Improve Attraction of Fish to Fish Ladder Entrances	Paul Spruell
9:00	Jared Lamm	Are Plant Soil Feedbacks in Semi-Arid Grasslands Altered by the Invasive Winter Annual Grass, <i>Ventanata dubia</i> ?	Justin Bastow
9:20	Rachael Hamby	Do Biotic or Abiotic Factors Influence Long-Term Dynamics of the Invasive Grass, <i>Ventenata dubia</i> , in a Semi-Arid Ecosystem?	Rebecca Brown
9:40	Cody Thomas	Will Large Dam Removal Restore Native Plant Diversity? Trends on the Elwha River, Washington	Rebecca Brown
10:00	Break		
10:20	Olivia Morgan	Vegetation Community Development of Post-Dam Removal Reservoirs on the Elwha River, Washington	Rebecca Brown
10:40	Sultan Areshi	A Macroinvertebrate Bioassessment of Two Streams on Turnbull National Wildlife Refuge	Camille McNeely
11:00	Veronica Albecht	Fecal Coliform Levels in Stormwater Fed Cannon Hill Park Pond Significantly Increased Following Rain Events	Veronica Albrecht
11:20	David Nguyen	Evaluation of the Utility of the American College Health Association's National College Health Assessment II Survey for Identification of Health Behaviors Associated with Academic Performance	Krisztian Magori

Oral Session 2: Sociology, Social Work, Women and Gender Studies

Room 124, 8:40 - 11:40 a.m.

Time	Author	Title	Mentor
8:40	Sarah Caune, Madi Casto	Water Bottles: A Sociological Approach	Dori Roberts
9:00	Ella MCalidaine	Qualitative Study: Inter-Generational Domestic Violence	Todd Hechtman
9:20	Samantha Randall	Childhood Experiences: Their Impact on Empathy and Optimism	Kerryn Bell
9:40	Kimberly Earl	Adverse Childhood Experiences and Sexual Assault	Bipasha Biswas
10:00	Break		
10:20	Danielle Evert	The ACE's Effect on Depression	Bipasha Biswas
10:40	Hanncel Sanchez	The Catholic Church and Spousal Rape: Examining the Church's Stance on Spousal Rape in 1970's and 1980's	Joseph Lenti
11:00	Minerva Zayas	Beyond Labels and Boundaries: Queer Chicana Individuals and Psychological Identity Development	Jessica Willis
11:20	Stephanie Sandlin	Transgender Representation in Media: Trans Reactions to Trans Media Representations	Elizabeth Kissling

Oral Session 3: Education and Children's Studies

Room 201, 10:00 - 11:40 a.m.

Time	Author	Title	Mentor
10:00	Yesenia Aquino-Bautista, Gladys Flores, Esmeralda Garibay, Ivonne Espino	The Impact of Teacher Diversity on Students	Angela Schwendiman
10:20	Shawn Peterson	Different Lives Different Standards: The Impact of Culture on English Language Learners	Beth Torgerson
10:40	Amanda Mell	Equity Pedagogy to Produce Citizens Read to Participate in a Multicultural, Inclusive World	Norma Cardenas
11:00	Audel Rosas	A Fish Outta Water: A Cross-Cultural Perspective on International Student Development	Christine Torres-Garcia
11:20	Paisley Heckman, Samantha Swanson	Temporal Analysis for Runaways at Residential Youth Centers	Anna Tressider

Oral Session 4: Economics, International Affairs, History, Design and Urban and Regional Planning

Room 204, 8:20 a.m.—11:40 noon

Time	Author	Title	Mentor
8:20	Nik Taylor	Discrepancies in Game Theory: Why Different Optimal Strategies May Exist Despite Equal Payouts	Mark Holmgren
8:40	Philip Siler	A Meta-Analysis of Studies Evaluating the Financial Benefits of a Bachelor's Degree	Kevin Pirch
9:00	Alberto Felix Beltran	Venezuela's Economic Crisis	Kristin Edquist
9:20	Tabitha Ormaechea	Mexico City Water Crisis: Institutional Drivers and Political Failures	Vandana Asthana
9:40	Maria Briseida Rios	Dispelling Latino Stereotypes of Success	Martin Meraz Garcia
10:00	Break		
10:20	Mica Pointer	Wine Women and Song: Mythic Evidence for the Favor of Women by Dionysus	Georgia Bazemore
10:40	Kelli Knerr	Betty Crocker and Rosie the Riveter: The Changing Roles of American Women Entering the Workforce during World War II	Ann Le Bar
11:00	Meg Lybbert	A Lack of Social Media and Its Effect on Technological Development, Reception and Use	Travis Masingale
11:20	Michelle Abunaja	ADA Transition Plan for Public Rights-Of-Way for City of Othello, WA	Alex Mann

Oral Session 5: English I

Room 221, 8:40 a.m.—11:40 noon

Time	Author	Title	Mentor
8:40	Aiko Nagabuchi	Cultivation of Critical Thinking Through Philosophical Dialogue	LaVona Reeves
9:00	Nichole La Torre	Between Two Worlds: Pearl S. Buck and Barbara Mitchell	LaVona Reeves
9:20	Braik Aldoshan	bell hooks' "interrogation of oppression": Reflections on a Saudi Widow's Life	LaVona Reeves
9:40	Maria Estrada-Loehne	Heritage Language Maintenance: A Mexican Mother's Success	LaVona Reeves
10:00	Break		
10:20	Kevin Lemberger	Applying Plato & Baudrillard to English Education in Japan	LaVona Reeves
10:40	Logan Amstadter	Cherokee Women's Subversive Literacy and Caliban's Linguistic Weapon: World Englishes and Resistance to Imperialism Through Appropriation	LaVona Reeves
11:00	Renee Kenney	Empowering English Language Learners in Composition Courses	Tracey McHenry
11:20	Charis Ketcham	Contrasting Cultural Approaches to Critical Thinking, Voice, and Plagiarism	Tracey McHenry

Oral Session 6: Engineering

Room 243, 8:40 - 11:40 a.m.

Time	Author	Title	Mentor
8:40	Konrad Hubbard	Material Properties of 3D Printed ABS	Heechang Bae
9:00	Jennifer Leaf	Industrial Cupcaker 3000	Robert Gerlick
9:20	Blaine Wagner	Sensitivity Analysis of a Circular and Square Piezoresistive Pressure Sensor for MEMS Applications	Awlad Hossain
9:40	Jennifer Leaf	Humanoid Robot Simulation: NASA Space Robotics Challenge	Donald Richterj
10:00	Break		
10:20	Jennifer Leaf	3D Bin Picking and Placing of Ping Pong Balls Using Robotic Vision and Depth Data	Donald Richterj
10:40	Jennifer Leaf	Remote interaction with NAO Robot Using a Tablet Device	Robert Gerlick
11:00	Thorin Brown, John Gunderson, Kari Hamilton	Advanced Robotics Vision Robot	Donald Richterj
11:20	William Groves, Chase Walter, Derek Weston	Vision Guided Robotics Using Light Filters	Donald Richterj

Oral Session 7: Psychology

Room 101, 1:50 - 4:20 p.m.

Time	Author	Title	Mentor
1:50	Aubrey Weekes	Math Confidence, Gender, and Major Selection	Theresa Martin
2:10	Edith Melendez	Best Practices for Undocumented Students in Institutions of Higher Education	Shanna Davis
2:30	Sam Nemri, Kaelyn Baker	Examining Differences in Coping Strategies of Men and Women Considering Race, Religious Affiliation, and Sexual Orientation	Kayleen Islam-Zwart
2:50	Ashley Ellison	Addressing the Gaps in Services and Supports a Comprehensive Regional University Offers Students Who Have Experienced Trauma	Susan Ruby
3:10	Break		
3:20	Elaine Appleby	Physiological Effects of Virtual Reality	Jonathan Anderson
3:40	Nichole Gibson	Quality of Healthcare and Economic Class	Theresa Martin
4:00	Michael Bernal	Relationship Satisfaction and Infidelity	Theresa Martin

Oral Session 8: Chemistry, Biochemistry, Geology, Physics, and Computer Science

Room 124, 1:50 - 4:20 p.m.

Time	Author	Title	Mentor
1:50	Ryota Kato	Decolorization of Dye in Aqueous Solution Using Ions Exchange Resin Coated with TiO ₂	Hiroharu Kawanaka
2:10	Jolene Strand	Blood, Soil, & Crime: A Challenging Mix	Peter Bilous
2:30	Brena Thompson	Synthesis and Reactivity of New Borohydride Compounds	Eric Abbey
2:50	Eric Perry	Geochemical Analysis of Spokane Urban Neighborhood Soils	Carmen Nezat
3:10	Break		
3:20	Boaz Brown, Chiss Leech, Jake Herbel	The Effect of Energy Transfer on the Shape of an Electromagnetic Field	Mark Gorski
3:40	Brett Fielding	Pseudo-Random Weight Training for FPGA Implemented Combinatorial Logic Perceptron	Kosuke Imamura
4:00	Robert Humphres	Microsoft's Voice Recognition and Altered Wave Forms	Dan Tappan

Oral Session 9: Anthropology and Communication Studies

Room 201, 1:50 - 4:40 p.m.

Time	Author	Title	Mentor
1:50	Lidia Velasco	Emotion in Translation: Korean to Spanish	Michael Zukosky
2:10	Amanda Gardner	The Albanian Sworn Virgins	Julia Smith
2:30	Olivia Manusia	Research in Identity and Video Games	Julia Smith
2:50	Jennyfer Mesa	Cross-Cultural Placemaking in Latino Central Washington	Dick Winchel
3:10	Break		
3:20	Tiffany Magazzeni	Go Ask Your Father: Comparing Scholarly Discourses on Motherhood and Related Issues Across Five Western Industrial Societies	Peter Shields
3:40	Lindsey Bryden	Online Dating and the Uses and Gratifications Theory	Galina Sinekopova
4:00	Jessica English	Reading the Romance; Through the Eyes of a Millennial Feminist	Galina Sinekopova
4:20	Daniel Roemer	A Dramatistic Analysis of Sandy Hook Promise's Evan	Patricia Chantrill

Oral Session 10: Physical Therapy and Physical Education, Health and Recreation

Room 204, 1:50 - 4:20 p.m.

Time	Author	Title	Mentor
1:50	Leah Mohtes-Chan	Investigating the Effectiveness of Next Messaging Intervention in Health Care	Dan Anton
2:10	Emilie Lahman	Quantifying Clinical Instructor Mentorship and Community Benefit in the Doctorate of Physical Therapy Curriculum	Joe Palmer
2:30	Grace Flora	A "War on Obesity" or Our Patients: Weight Bias Among Healthcare Providers	Meryl Gersh
2:50	Break		
3:00	Michael Ballasch, Hannah Gates, Leah Wheaton-Straub	A Comparative Study of Total Motion Release and Proprioceptive Neuromuscular Facilitation on Hamstrings Tightness	Garth Babcock
3:20	Olivia Frangos	The Prevalence of Gluteus Medius Weakness in the Average Population	Garth Babcock
3:40	Kayla Clauson, Carli Robins, Noah Dorr	Comparison of Low-Dye Arch Support and Kinesiotape Arch Support	John Gerber
4:00	Rachael Nevin	Can Pokémon Go Motivate People to Walk More	Sarah Mount

Oral Session 11: English II

Room 221, 1:50 - 4:20 p.m.

Time	Author	Title	Mentor
1:50	Raquel Ramos	The Rhetorical Analysis of Permanent Body Art	LaVona Reeves
2:10	Eloy Velasco	Rap's Role in Keeping Poetry Alive	Max Holmer
2:30	Karla Wahl	Fin de Siècle: Fear and Loathing in Victorian Literature	Beth Torgerson
2:50	Break		
3:00	Julianna Crame	The Dividing Line Between Us: An Analysis of the "Actualized Self" in Henry James Novellas	Anthony Flinn
3:20	Stephanie Welzig	Authorial Intention vs Postmodern Difference: Zola's Thérèse Raquin and the Subjective Reader	Beth Torgerson
3:40	Katherine Setzer	Ethos, Pathos and Changing Modalities in the Composition Classroom	Justin Young
4:00	Matthew Greene	Toward a Possible Social-Epistemic Creative Writing Pedagogy	Justin Young

Oral Session 12: Philosophy

Room 243, 1:50 - 4:40 p.m.

Time	Author	Title	Mentor
1:50	Alfred Michael La Pier	United States of America Conceiving the Natural World and Law of the Declaration of Independence and How the Indigenous People Shaped Its Creation	Terrance MacMullan
2:10	Jason Heitzmann	The Language of Identification	Mimi Marinucci
2:30	Loni Tuber	Climate Change and Moral Obligations	Terrance MacMullan
2:50	Break		
3:00	Corey Horn	A Battle for Freedom: Where Does Negative Liberty End and Positive Begin?	Terrance MacMullan
3:20	Raymond Shiner	Christianity – A Platonic Religion	Terrance MacMullan
3:40	Braden Agueros	Nietzsche & Stoicism	Terrance MacMullan
4:00	Loni Taber	Philosophical Prejudice: Nietzsche on Morality	Terrance MacMullan
4:20	Mica Pointer	Shakespeare's Globe Theater: A Chimera of Dramatic Architecture	Christopher Kirby

Aging Policy Fair

Senior Hall, 2nd Floor Lounge

10:00 a.m.-11:30 noon and 2:00 - 4:00 p.m.

Presenter(s)	Title	Mentor(s)
Gabriella Avakimian, Dian Chavira-Lopez, Magdalena Morado., Aimie Inthoulap, Zen Orozco	Social Work Extenders in Whitman County	Anna Tresidder
Danielle Beltrame, Travis Fletcher, Jordan Roberts, Katrina Hilton, Eyerusalem McDowell	Steven's County Diabetes Management Program	Anna Tresidder
Damen Diaz, Delaney Hodgins, Krystal Holloway-Overly, Blas Ortiz, Jessica Cruz	STOI Photovoice	Anna Tresideer
Veronica Glanville	The Evolution of Football Rules	Chadron Hazelbaker
Brittney Heimbigner	Our New Normal	Daniel Ruddell
Joe Jacobs	The Preparedness of the American Employer for the Age War	Daniel Ruddell
Cynthia Jewett	Using Online Video to Measure Student Interest in Aging Studies	Sharon Bowland
Lucas Leek	Disenfranchised Grief in NDL's in Elderly and Aging	Mary Ann Clute
Billie Milliken, Jaime Olguin	Remembering the Forgotten: An Intervention for Vietnam Veterans	Amanda Reedy
Sreenath Panchagnula	Error Correction in Older and Younger Adults	Danielle Sitzman
Mackinzie Peterson	"Gigi and Leonard Play One Last Time" Children's Book	Ryan Parry
Robyn Pulliam	Understanding the Mental, Physical and Financial Stresses on Family Care Providers	Daniel Ruddell
Debra Reynolds	Dementia with Alzheimer's	Daniel Ruddell
Laura Robinson	Washington State's Health Home Program: Care Coordination Designed to Improve Health and Create Networks of Support for High Cost, High Risk Utilizers of the Health Care System	Yolanda Lovato
Bobby Taber, Cynthia Amaya, Jonathan Loomis, Danya Benlitifah	Lincoln County Technology Use in Healthcare	Anna Tresidder
Karen Walker	Older Women and Multiple Experiences of Abuse over a Life Course	Sharon Bowland
Vivian Wang, Shanael Payne, Andy Tudor, Nicole Rhoades	Health and Safety Improvements: Spokane Tribe of Indians	Anna Tresidder

Poster Sessions

Hargreaves Hall, 2nd Floor Reading Room

Presenters will be available to discuss their posters during each session

Morning Session 1: 8:30 - 9:45 a.m.

Poster # 1	Presenter(s)	Title	Mentor(s)
Morning 8:30-9:45			
1A. Geology	Keylin Huddleston	Comparison of Dam Rocks Along the Spokane River	Chad Pritchard
1B. Geology	Mike Espinosa, Bryce Hanson, Garrett Hendrick, Mitchell Urlacher	Geotechnical Engineering: Optimum Moisture Content for Compaction of Touchet Bed Soil from Touchet, WA	Richard Orndorff
1C Geology	Christa Murphy, Andrew Scholtz, Joel Orchard, Kylie Ottmar	Grain Size Analysis and Atterberg Limits of Touchet Bed Soil	Richard Orndorff
2A. Geology	Keylin Huddleston, Bernt Goodson, Calen Busch, Kyle Duckett	CBR Testing of Touchet Bed Soils; Touchet, WA	Richard Orndorff
2B. Geology	Elijah Hansen, Max Barnett, Andrew McLeod, Tom Kissack	Unconfined Compressive Strength of Touchet Soil	Richard Orndorff
2C. Geology	Kristine Larson	Deciphering of Cretaceous and Eocene Granitoids in the Spokane Area	Chad Pritchard
3A. Geology	Bradley Thompson	Look Out for the Latah	Chad Pritchard
3B. Geology	Alyssa Fitzgerald	Medical Lake: Diving into the Geology	Chad Pritchard
3C. Geology	Joe Edgley	Geologic Reconnaissance of Magnison Butte, Medical Lake, Washington	Chad Pritchard
4A. Geology	Elijah Hansen, Kyle Duckett	Faulted Buttes of the Medical Lake Area	Chad Pritchard

Poster # 1	Presenter	Title	Mentor
8:30-9:45			
4B. Geology	Justin Schneider	Oroville Dam, the Unfolding Tale of the Nation's Tallest Dam	Richard Orndorff
4C. Geology	Mitchell Urlacher	The Story of Glen Canyon Dam	Richard Orndorff
5A. Geology	Bernt Goodson	The Removal of Elwha and Glines Canyon Dams: A Story of River Restoration	Richard Orndorff
5B. Geology	Yuanrong Wang	The Failure of Banqiao Dam, China: One of the Worst Disasters in World History	Richard Orndorff
5C. Geology	Calen Busch	Surface Water Sampling Within a Large Upper Columbia River Point Bar Complex Containing Metal-Rich Slag Deposits	Carmen Nezat
6A. Geology	Bernt Goodson, Austin Armstrong	Preliminary Structural Interpretation of the Willow Lake Aureole	Chad Pritchard
6B Geology	Kyle Duckett	Simulating Conditions under which Red Floes Form from Contaminated River Bank Sediments along the Couer d'Alene River	Carmen Nezat
6C. Geology	Lucas Evert	Analyzing Local Basalts Using Portable XRF on Fresh and Weathered Surfaces	Chad Pritchard
7A. Geology	Lana Williamson	Hawk Creek's Winding Recession Based on Portable X-Ray Fluorescence	Chad Pritchard
7B. Physical Education, Health & Recreation	Naomi Eastland, Ireland Hendrix, Justine Nuckols, Noah Dorr	20 Year Old Division I volleyball Player with a Staphylococcus (Staph) Infection	Garth Babcock
7C. Physical Education, Health & Recreation	Madeline Elliott, Isabella Quaratiello	Case Study of 15-Year-Old Male Football Player with a Clavicular Fracture	Garth Babcock
8A. Physical Education, Health & Recreation	Jayme Schaefer, Carli Robins, Eli Strom	16 Year Old Male High School Athlete with Spondylolisthesis	Garth Babcock
8B. Physical Education, Health & Recreation	Lisa Young, Leah Straub, Iris Fiaui	21 Year Old Collegiate Track Athlete with Osteitis Pubis	Garth Babcock
8C. Physical Education, Health & Recreation	Noah Ziemann	Bi-lateral Tibial Stress Fractures Following Shin Splints in a 19 Year Old Collegiate Women's Basketball Player: A Case Report	Garth Babcock
9A. Physical Education, Health & Recreation	Sarah Gaston, Martin Waldrip, Andrew Cheney	18 Year Old Collegiate Football Player with a Labral Tear	John Parry Gerber
9B. Physical Education, Health & Recreation	Lindsay, Hayes, Kristin Freitas	Case Study of a 21-Year-Old Male Division 1 Basketball Player with a Scaphoid Fracture	John Parry Gerber
9C. Physical Education, Health & Recreation	Keira Lathrop, Erin Vandersypen	16 Year Old High School Student with Chronic Extensor Carpi Ulnaris Tendon Subluxation	John Parry Gerber

Poster # 1	Presenter	Title	Mentor
8:30-9:45			
10A. Physical Education, Health & Recreation	Cassidy Schreiber	A 20 Year Old Division I Football Player with Loose Bodies in the Elbow	John Parry Gerber
10B. Physical Education, Health & Recreation	Destinee Thomas, Harli Spurgeon	21 Year Old Division I Football Athlete with Osteochondritis Dissecans	John Parry Gerber
10C. Physical Education, Health & Recreation	Charles Woolley	Neck Strength and the Incidence of Concussions in High School Athletes	Garth Babcock
11A. Physical Education, Health & Recreation	Lucas Uphaus	Female Soccer Athlete Sustains Medial, Lateral and High Ankle Sprain	Nora Iffi
11B. Physical Education, Health & Recreation	Emily Dunstan, Johanna Sherman, Thea Pederson, Jasmine Magana	The Effects of Different Recovery Positions Post-Anaerobic Work in Collegiate Sprinters	Annika Vahk
11C. Physical Education, Health & Recreation	Taylor Bennett, Duane Dahl, Quintin Barnard, Mallory Taylor, Chloe Williams, John Weaver	Measures of Daily Physical Activity and Health in EWU Faculty and Staff	Christi Brewer
12A. Physical Education, Health & Recreation	Nicholas Taylor, Nick Anthony, Erin Clark, Alex Maszak, Tony Keovongphet, Brandon Kirian	Caffeine and Its Effect on Muscular Endurance and Strength in Chronic Caffeine Users	Christi Brewer
12B. Physical Education, Health & Recreation	Andrew Cheney	Athletes Hydration Knowledge: Drinking Preferences in Division I Collegiate Athletes	Garth Babcock
12C. Physical Education, Health & Recreation	Kelley Thorne	Billie Jean King	Chadron Hazelbaker
13A. Physical Education, Health & Recreation	Julio Maldonado	Jesse Owens	Chadron Hazelbaker

Poster # 1	Presenter	Title	Mentor
8:30-9:45			
13B. Psychology	Kristie Johnson Balbuena	Emotional Avoidance Among Substance Users vs. Non-Users	Theresa Martin
13C. Psychology	Charles Chapman	Biofeedback Intervention for Anger Management	Charalambos Cleanthous
14A. Psychology	Jayde Albright, Jenny Harrison, Jai'Lysa Hoskins, Brandon Janicek, Kevin Kminek, Lathan Ostlie, Alexa Shaw	Social Media and Its Effects on Relationships	Heidi Hillman
14B Psychology	Savannah Kerbaugh, Michael Zorich, John Dunn, Melissa Wagner, Daniel Ivar Sanchez Garcia, Tabitha Black	Trust in Political Media Sources: An Analysis of Political Opinion and Discussion among Millenials	Heidi Hillman
14C. Psychology	Rachel Graham, Autumn Sule	The Impact of Marital Status and Children on Woman's Adjustment to Incarceration	Kayleen Islam-Zwart
15A. Psychology	Nikkol Macy	Individual Differences in Correcting Memory Errors	Danielle Sitzman
15B. Psychology	Sydney Cobb	An Exploration of Factors That Influence Error Correction	Danielle Sitzman
15C. Psychology	Jacquelyn Ross	Attitudes of University Faculty & Staff about Title IX	Kayleen Islam-Zwart
16. Psychology	Juro Smollin	Gender Differences in Psychological Reaction to Sexual Victimization Among Jail Inmates	Kayleen Islam-Zwart
17. Psychology	Jennalynn Estrellado, Katherine Thomas	The Influence of Feedback on Predicting Memory	Danielle Sitzman
18. Psychology	Lisa Chudoba	Brain Injury, Executive Dysfunction, and Related Comorbidities	Jonathan Anderson
19. Psychology	Nicholas Mehrnoosh, Marie Gray, Elaine Appleby, Lisa Chudoba	The ABC's of Organization: How Tasks Impact Time Estimation	Jonathan Anderson
20. Psychology	Nicholas Mehrnoosh, Marie Gray	The Phenomenology of Lived Experience with Traumatic Brain Injuries	Johnathan Anderson
21. Psychology	Sandra Espinoza Montes	Intracultural Bullying: Mexican Americans Bullying Mexican Immigrants	Katherine Colles

Morning Session 2: 10:15 - 11:30 a.m.

Poster # 2	Presenter	Title	Mentor
Morning 10:15-11:30			
1A. English	Josiah Baldwin	Getting Grants for the Guild School	Teena Carnegie
1B. English	James Bailey	A Sustainable Contribution to the Community	Teena Carnegie
1C. English	Kolod Aljohani	Service-Learning: Access to Unlimited Electronic Recycling Resources	Teena Carnegie
2A. English	Kendal Cler	Powering Off Electronic Waste	Teena Carnegie
2B. English	Alex Loomer	Restoring Dignity Among Homeless and Low-Income Women	Teena Carnegie
2C. English	Joseph Figg	Finding Profession in Passion: Achieving Educational Goals Through Service	Teena Carnegie
3A. English	Alecia Franklin	It's More Than Just Cookies	Teena Carnegie
3B. English	Cassandra Oppedal	Moving From Frustration to Success in Service Learning	Teena Carnegie
3C. English	Abigail Scarborough	Granting a School's Wishes	Teena Carnegie
4A. English	Andrea Tobar	Connecting the Puzzle Pieces Within the Community	Teena Carnegie
4B. English	Bryan James	Using Failure to Succeed	Teena Carnegie
4C. English	Tessa Reininger	Community Grant Writing: Kindling the Hearth	Teena Carnegie
5A. English	Katherine Setzer	Ethos, Pathos and Changing Modalities in the Composition Classroom	Justin Young
5B. English	Itaska Lee-Russey	Major Depressive Disorder	Paul Lindholdt
5C. Communication Studies	John Collett	No Girls Allowed! Women's Sports Marginalized in Sports Television	Galina Sinekopova
6A. Communication Studies	Sara Ring	Conceptual Monogamy	Galina Sinekopova
6B. Communication Studies	Ariel Mcmillan	Ask Ariel	Julia Smith
6C. Communication Studies	Laura Thayer	In Service of Philanthropy: How Communication Theories Can Strengthen the Fundraising Profession and Build the Capacity of America's Non-Profit Sector	Galina Sinekopova
7A. Communication Studies	Patrick McHugh	Swiftboating Britain: The Rhetoric of Independence	Patricia Chantrill
7B. Communication Studies	Elijah Johnson	Mosaic: Seeing the Bigger Picture	Teena Carnegie
7C. Chemistry & Biochemistry	Hannah Hefely	Pyridine-N-Oxide Ligand Variation Effects on the Structure and Magnetism of Quasi-Two-Dimensional Antiferromagnets	Jamie Manson
8A. Chemistry & Biochemistry	Jessica Ripley	Effect of Halide-Doping on the Structural and Magnetic Properties of Quasi-2D NiX ₂ (pyrazine) ₂ (X=Cl ⁻ , Br ⁻ , or I ⁻)	Jamie Manson

Poster # 2	Presenter	Title	Mentor
10:15-11:30			
8C. Chemistry & Biochemistry	Taylor Pottschmidt	Synthesis of α -amino Arylacetic Acid Boron Complexes with Ligands Containing Amino Acids	Ashley Lamm
9A. Chemistry & Biochemistry	Crystal Winter	The Effect of Ethyl Alcohol on the Activity of β -galactosidase	Kenneth Raymond
9B. Chemistry & Biochemistry	Aidee Vasquez	Analysis of Pharmaceutical and Polymer Mixtures for Identification of Individual Components	Peter Bilous
9C. Chemistry & Biochemistry	Crystal Everett	The Elemental Composition and Comparison of Lipstick Samples Analyzed by X-Ray Fluorescence	Peter Bilous
10A. Chemistry & Biochemistry	Spencer Johnson	Synthesis of Borohydride Compounds	Eric Abbey
10B. Chemistry & Biochemistry	Jessica Shooter	Synthesis of Novel Organoborohydrides	Eric Abbey
10C. Chemistry & Biochemistry	Keylin Huddleston	Hydrogen/Deuterium Isotope Fractionization in Water	Anthony Masiello
11A. Chemistry & Biochemistry	Caitlin April	Purification and Pre-Characterization of the R178C ITPase Mutant	Nicholas Burgis
11B. Chemistry & Biochemistry	Nicholas Broderius	Expanding the Quantitative Analysis of Acetaminophen in Children's Liquid Pain Relief Medicines by Cyclic Voltammetry (CV)	Wes Steiner
11C. Chemistry & Biochemistry	Brennan Nation	Carbon Dioxide Capture in Natural Gas Using Porous Materials	Yao Houndonougbo
12A. Chemistry & Biochemistry	Bethany Pugh	Molecular Dynamics Simulations of Human Inosine Triphosphatase R178C	Yao Houndonougbo
12B. Biology (NCHS)	Jacqueline Egger, Julianne Socha	Analysis of the MADS-Box Gene within <i>Malus Domestica</i> Due to the Presence of Pesticides and the Diversity They Cause	Randall James
12C. Biology (NCHS)	Alex Breede, Sameer Rijal	Analysis of Convergent Evolution of Ion Channel Toxin Adaptive Mutations within Amphibians	Randall James
13A. Biology (NCHS)	Aidan Chaparro, Cyndi Marshall	Analysis of Sea Lion Predation Patterns of Endangered Salmonid Stocks Along the Easter Pacific Coast Using Taq Man Probes Targeting Species Specific SNPs	Randall James
13B. Biology (NCHS)	Hannah Gibson	Assessment of Metabolic Disorders and Genetic Diversity in Conjunction with Species Endangerment Policies of Washington State Grey Wolves (<i>Canis Lupus</i>)	Randall James
13C. Biology (NCHS)	Matthew Mickey, Michael Kron, Ryan Leaming	Analysis of <i>Pisaster ochraceus</i> Mitochondrial Metabolic Genes as a Clue to Susceptibility and Survival of Sea Star Wasting Disease	Randall James
14A. Biology (NCHS)	Ashleigh Miller, Matthew Dolan	Analysis of the Mutations Directly Affecting Poison Resistance in the Sodium Potassium Pump of <i>Formica obscuripes</i>	Randall James
14B. Biology (NCHS)	Oliver Miller, David Song	Analysis of Regionally Collected Microbes for Novel Bioluminescent Pathways	Randall James
14C. Biology (NCHS)	Francis Neff, Steven Patrick	Analysis of the Pleiotropic Heat Adaptive TRPV3 Gene in Columbian Mammoth	Randall James

Poster #2	Presenter	Title	Mentor
10:15-11:30			
15A. Biology (NCHS)	Calvin Payne, Ireland Shoemaker	Analysis of Regional Moths' Electron Transport Genes for Clues to Cold Tolerance	Randall James
15B. Biology (NCHS)	Kaylee Perich, Anna Danford, Alex Horn, Sabra Dunakey	Evaluation of 16s Bacterial Gut Consortia from <i>Bombus Impatiens</i> Using Modified AFLP Analysis	Randall James
15C. Biology (NCHS)	Marissa Pounds, Anna Danford, Heidi Niederstadt	Using Lichens as a Model for Glutathione Synthase Genetics in Coral Reefs	Randall James
16. Biology (NCHS)	John Shuster, Marie Chapman, Sean Flannery, Kendall Bart	Analysis of Novel Glutenase Genes Found in Wheat Consuming Arthropods to Find Potential Therapeutic Uses for Celiac Disease	Randall James

Afternoon Session 3: 2:15 - 3:30 p.m.

Poster # 3	Presenter	Title	Mentor
Afternoon 2:15-3:30			
1A. Economics	Allison Harvey	Are the Rich Getting Richer and the Poor Poorer?	David Bunting
1B. Economics	Corey Smith	The Influence of Religion on Male and Female Educational Attainment	Nicholas Larsen
1C. Economics	Mitchell Clements	Head Trauma in Mixed Martial Arts: An Analysis of Fighters Earnings at the Expense of Mental Health	Kelley Cullen
2A. Economics	Rachel Swindell	The Impact of Overall Athletic Success on the Number of University Applications	Kelley Cullen
2B. Economics	Christopher Watkins	Forecasting Potential Gate Revenue for a Seattle NHL Franchise	Kelley Cullen
2C. Economics	Donya Quarnstrom	Does Financial Aid Impact Student Success at Regional Comprehensive Universities in the U.S.? A Panel Data Approach	Kelley Cullen
3A. Biology	Amber Framstad	Glycosylation of CD68 During Osteoclastogenesis	Jason Ashley
3B. Biology	Rachel Clark	Kinetics of Notch Signaling During Osteoclastogenesis	Jason Ashley
3C. Biology	Evan Knudson, Chantilly Higbee	Optimization of Amphipod (<i>Hyaella azteca</i>) Housing and Maintenance to Induce Reproductive Activity in Laboratory Conditions	Joanna Joyner-Matos
4A. Biology	Rachel Gulden	Annotation of the <i>Drosophila fucusphila</i> 3L Chromosome Contig 11 as Part of the Genomics Education Partnership	Luis Matos
4B. Biology	Taylor Lewis	Final Annotation Report of <i>Drosophila eugracilis</i> Contig 33	Luis Matos

Poster # 3	Presenter	Title	Mentor
2:15-3:30			
4C. Biology	Sarah Hindle	An Analysis of the Benthic Macroinvertebrate Community in Lake Roosevelt, WA and Its Impact on Recruitment in First-Feeding White <i>Sturgeon (Acipenser transmontanus)</i>	Camille McNeely
5A. Biology	Larissa Severance	Phosphorous Content in Hangman Creek, Spokane, WA	Camille McNeely
5B. Biology	Henry Price	The Source of Excess Nutrients to Pine Draw	Camille McNeely
5C. Biology	Josh Chastek	Evaluating the Toxicity and Teratogenicity of Two New Antifungal Drugs	Charles Herr
6A. Biology	Christina Ramelow, Laura Hansen	Culture of Zebrafish Ovarian Cells to Facilitate the Study of <i>Pseudoloma neurophilia</i>	Charles Herr
6B. Biology	Faurest Nelson Wicks	The Effect of Climate Conditions on the Seasonality of Mosquito Genera	Krisztian Magori
6C. Biology	Bryan Witte	Range Testing Acoustic Receivers on Lake Roosevelt, Washington: Implications for Array Design and Fish Tracking	Paul Spruell
7A. Biology	Shawna Warehime	Rainbow Trout (<i>Oncorhynchus mykiss</i>) Summer Habitat Utilization of Lake Spokane, Washington in Relation to Water Quality Parameters	Paul Spruell
7B. Biology	Matt Duddy, Richard Souders	Immediate Effects of Water Temperature on Metabolic Rate and Behavior of White Sturgeon	Paul Spruell
7C. Biology	Samuel Gunselman	Life History Flexibility May Allow Colonization of Diverse Habitats by <i>Culaea Inconstans</i>	Paul Spruell
8A. Biology	Laurisa Ankley	Supplemental Iron Offsets the Antibacterial Properties of Manuka Honey	Robin O'Quinn
8B. Biology	Morgan Thomas	Impact of Intranasal Administration of Oxytocin on Symptoms of Post-Traumatic Stress and Associated Reward-Seeking Behavior	David Daberkow
8C. Biology	Joel Seler, Jackie Rodgers, Nathan Scherk, Diana McSwain	Improving the Sensitivity and Effectiveness of the Fast-Scan Cyclic Voltammetry Dopamine Electrode	David Daberkow
9A. Biology	Samantha Ayotte, Molly Sherwood, Sarah Wyer	Anthelmintic Resistance in Equine Strongylidae of Eastern Washington	Javier Ochoa-Reparaz
9B. Biology	Shelby Hunter	Factors Influencing Roost-Site Selection in Overwintering Cavity-Nesting Birds in Eastern Washington	Margaret O'Connell
9C. Biology	Ricardo Ely	First Fossil Occurrences of the Sphenomorphus Species Group (Squamata; Scincidae; Lygosominae) from the Late Oligocene Namba and Etadunna Formations of South Australia	Judd Case
10A. Chemistry & Biochemistry	Keylin Huddleston	Hydrogen/Deuterium Isotope Fractionation in Water	Anthony Masiello
10B. Public Health	Dylon Evanson, Freddy Lopez, Matt Jeffs	Facts & Alternative Facts: Exploring Depictions of Cancer in Frank McCourt's Limerick	Frank Houghton

Poster # 3	Presenter	Title	Mentor
2:15-3:30			
10C. Public Health	Hannah Pithan	Facts & Alternative Facts: Exploring Depictions of Infant Mortality in Frank McCourt's Limerick	Frank Houghton
11A. Public Health	Jessica Rodarte, Shandiah Mendoza, Dana Colley	Facts & Alternative Facts: Exploring Depictions of Tuberculosis in Frank McCourt's Limerick	Frank Houghton
11B. Public Health	Aaron Serrano, Ryan Farrell	Facts & Alternative Facts: Exploring Depictions of Mortality in Frank McCourt's Limerick	Frank Houghton
11C. Public Health	Ghazal Meratnia	Family Dynamic, Mental Health, and Housing	Frank Houghton
12A. Biology (SCC)	Samantha Martinez, Maggie Pimentel	Mutagenesis of Bordetella Type III Secretion System Effector A	Suzanne Bassett
12B. Biology (SFCC)	Amanda Chandler	Genomic Analysis of <i>Pseudomonas fluorescens</i> L5.1-96 and Its Role in Take-All Decline	Ruth Kirkpatrick
12C. Biology (SFCC)	Christa Mattocks	Sequencing the DNA of <i>Pseudomonas fluorescens</i> L5.1-96	Ruth Kirkpatrick
13A. Biology (SFCC)	Charles Nitschke	Study on <i>Pseudomonas fluorescens</i> L5.1-96 Super Colonization	Ruth Kirkpatrick
13B. Biology (SFCC)	Sarah Rodgers	Sequencing the Genome of <i>Pseudomonas fluorescens</i> L5.1-96	Ruth Kirkpatrick
13C. Biology (SFCC)	Stephen Purdue	Looking for Mechanisms of <i>Gaeumannomyces graminis</i> var. tritici Suppression and Wheat Rhizospheric Colonization in the DNA of <i>Pseudomonas fluorescens</i> L5.1-96	Ruth Kirkpatrick
14A. Biology (SFCC)	Sarah Rodgers	Fern Watch Washington	Ruth Kirkpatrick
14B. Biology (SFCC)	Christa Mattocks	Sword Fern Ontogeny	Ruth Kirkpatrick
14C. Modern Languages	Taylor Baldwin, Raghda Almeyrat, Rachel Musser, Erin Locke	ESP for Baristas	Gina Petrie
15A. Physical Therapy	Kathryn Yaremko	Effects of Nail Polish on Accuracy of Pulse Oximetry Measurements	Megan Chatellier
15B. Government	Tiago Correia	A Search for Historical Solutions in the Rohingya Genocide	Vandana Asthana
15C. Computer Science	Matthew Firmin	Definition of AI Through Turing Test	Atsushi Inoue
16. Urban and Regional Planning	Amy Hilland, Martee Snyder	Hangman Creek Watershed Proposal	Alex Mann
17. Physics	Caressa Leymao, Danielle Villa	Energy Dependence of X-ray Attenuation Coefficients	Brian Houser

Poster #3	Presenter	Title	Mentor
2:15-3:30			
18. Children's Studies	Meredith Mattocks	What Is Leadership When It Comes to Crisis?	Charles Lopez
19. Sociology & Justice Studies	Ereisa Morales	An Investigation of Substance Abuse and Addictions Among Latino/a Adolescents, and Family Coping Resolutions	Joe Tedesco
20. Women's & Gender Studies	Amanda Nicole	To the Girl Who Came After Me	Elizabeth Kissling
21. Health Services Administration	Haley Oestreich	Raising Awareness of Mental Illnesses in Rural Teenagers	Anna Tresidder
22. Health Services Administration	Cassie Prather, Amelia Kraft	Knowledge of the Triple Aim among Health Profession Students and Its Perceived Relevance to Their Professional Practice	Anna Tresidder
23. Occupational Therapy	James Wingo, Jennifer Andres	Tales from the Garage: A Narrative Inquiry of Members at VetsGarage	Susan Burwash

Creative Works Project Descriptions

KCACTF Package

Joshua Baig

Sara Goff, Theatre

I will be performing the audition package that I brought to the Kennedy Center American College Theatre Festival (KCACTF). It consists of one comedic scene, which has a reference to sex, one dramatic scene that has stage violence within it, and one Shakespearean Monologue. It runs about 6 minutes in length and it explores many of the techniques that I have learned in the EWU Theatre department. Everything was rehearsed and performed under the supervision of my mentors and professors.

Scene Presentation "As It Is In Heaven" by Arlene Hutton

Hazel Bean, Holly Kirkman

Sara Goff, Theatre

This scene is from the contemporary drama "As it is in Heaven" by Arlene Hutton. Over the course of rehearsals in the Theatre department's Acting One class, we applied performance and rehearsal techniques developed by Michael Chekhov. In this play Sister Hannah and Fanny live and worship in a Shaker community. In this scene, Hannah confronts Fanny about her claims that angels from God have been speaking to her.

A Scene Painting for the Theatre

Hazel Bean

Shana Joslyn, Theatre

This 4'x8' stage flat features a number of painting techniques including a scumble, wet blends, stamping, sponging, and dry brushing. As theatrical scenery it is intended to enhance a dramatic production and provide a clear location and backdrop without distracting from the actions of the actors onstage. In this particular piece, the focus was on creating a foliage texture that would feel realistic from the audience's perspective.

The Truth

Carly Brown, Kendra Strahm, Nikki Hinckley, Monica Serpas-Chase, Zac Pinney

Chase Ogden, Film

Being homeless is without a doubt, one of the hardest situations someone can be in in life. The most basic needs can be hard to come by, and being in this position can even send someone over the edge. In this documentary, various people tell about their lives since they've been homeless. Thanks to Truth Ministries Homeless Shelter, these people have been welcomed in with open arms, and gotten help with getting back on their feet. We get to hear the emotional stories of how these people became homeless, and what their big plans are for the future. These people are just like us, and their voices deserve to be heard.

Readings from Northwest Boulevard

Leah Butterwick, Raven Java-McCandless, Rebecca Gonshak, Solomon Lovejoy, Tori Harned, Virginia Thomas, Tessa Bryant, Doralicia, Mendoza, Katie Tonellato

Rachel Toor, Creative Writing

As one of the Graduate Student Advisors of Eastern's undergraduate literary magazine, Northwest Boulevard, I will be leading a group of readers who have either worked or written for the magazine. Northwest Boulevard publishes Eastern's

undergraduate student and alum work in fiction, poetry, creative nonfiction, and art in an annual magazine run and created by Eastern undergraduates. These students work hard to raise funds for the magazine, choose selections for publication, and design the magazine from cover to cover. In these readings, we support that work and hope to spread the word to undergraduates and alum that there is a place to publish their work and an opportunity to learn the basics of literary magazine publishing.

The Kitchen

Amanda Caldwell

Jenny Hyde, Art

This acrylic painting is a 16 by 24 image of a kitchen with a bowl of fruit on the table, a bottle of wine and two glasses on the back counter. Ultimately, this piece served as an exploration of the techniques of realistic painting; helping build a foundation of skills to be used elsewhere in the future.

Monarchies, Royals and the Lack of Leadership

Cindy Chen

Charles Lopez, University College

This self-narrated work will be similar to a documentary. The short film will provide a general understanding of leadership. But explore more in-depth the characteristics of specific or various historic royal figures and/or monarchies and their lack of application of the concept of leadership during their time period and/or rule and its effect.

"Phat, Loud, Heavy, Fun"

Carl Christensen

Jonathan Middleton, Music

"Phat, Loud, Heavy, Fun" is composition for percussion ensemble, featuring Synthesizer and Vocoder. A Vocoder is an instrument, which alters the pitch and timbre of the inputted sound. In this instance the inputted sound will be the voice. Bov Iver uses this technique to create a canon in his song "Woods."

(link:https://www.youtube.com/watch?v=1_cePGP6lbU) The piece will be based off the works of the artist Dan Deacon, whose music is both heavily percussive and heavily electronic. He often uses electronically synthesized marimbas, xylophones and vibraphones, and these synthesized parts can be played on real instruments by my self and my percussionist peers. I think adapting and composing music of this strange sort of music will create an engaging and exciting presentation this spring. Here is a link to a 4 Movement piece by Deacon as a point of reference.

<https://www.youtube.com/watch?v=IADHZcdc0Ik>.

Grass Youth Movements

Sarah Corean, Max Reetz, Tiernan Osborne, Preston Maughan

Chase Ogden, Film

This 11 minute documentary promotes youth involvement in local politics by following two young people elected to positions in the Spokane County Democrats. 17-year-old Emily Provencio, a representative in the 4th Legislative District is the youngest person ever elected to a position in the SC Democrats. 25-year-old Jac Archer is the Vice Chair in the SC Democrats. Told through the experiences of a queer person-of-color and young woman about to embark on her college education, Grass Youth Movements discusses how progressive politics have already affected the nation, how they can continue to move the US into the future, and what young people can do to make that possible.

Nosebleed

Sarah Corean

Chase Ogden, Film

This 4 minute film explores a 17 year old girl's struggle to overcome her ghosts and love herself. Jackie is an intense person with a strong will to prove herself to the people around her, even if she gets into trouble. Mia, Jackie's girlfriend, finds her in the bathroom tending to a bloody nose after Jackie a fight with a classmate. They argue about Jackie's behavior, but Mia shows a great deal of love and support for Jackie in her emotional battle with herself.

All in the Past

Rebekah Curtis

Greg DuMonthier, Art

This sculpture represents my past and what I have recently gone through emotionally. To represent my childhood and child-likeness, I used toy rubber duckies and crayons. I expressed my feelings through the colors of crayons I melted on the toy rubber duckies as time frames. The warm colored ducks show the beginning of the time frame, to the cool colored ducks to show what was recent. This shows the inner feelings of emotions in time based format to explain troubles that one, as myself, has gone through.

Exploration

Rebekah Curtis

Greg duMonthier, Art

This oil painting has various ways of techniques throughout. My point for this painting was to get back into painting with oil, therefore I explored the different techniques that I am familiar with. This varies from soft, blended forms to thick, spiky dots of paint. I was originally painting it right-side up, but it is now up-side down because this way it activates the space by making the visual weight fall down instead of weighing the bottom of the work.

Women Are People First

Kayla D'Aprile

Elizabeth Kissling, Women's & Gender Studies

My thesis is about how men start out as love interests, and are problematic in women's lives within four films. The women are left with the choices of leaving the men or live on their own and make friends with other women to substitute the loss. I show that this is directly related to the concepts about the common knowledge around the ideology that cinema has created in regards to representations around women. In this case the common knowledge is that women "need" men. These films show heterosexual relationships and how women are supposed to be dependent on men. Moreover, the common knowledge is the wrapping around the box of ideology and the ideology in these movies states that women's lives revolve around men and that women are reduced to the body. The ideology shows how gender representation for women is fabricated and shown to reinforce the dominant groups and the downsides of women's relationships if you don't have a man and why. The discourse shows that over a wide range of story lines the discourse around a woman needing a man is always the same and that women are seen first as a body before seen as a person.

Family

Carolyn Darjany

Yaro Neils, Art

In 1993 I married my high school sweetheart and we began adding to our family with our first child a couple of years later. Over the last 22 years, our 4 children are amazingly different from one another and from ourselves. Yet, with all

those differences, similarities abound. We share mannerisms, memories, experiences, habits, personalities, and physical traits. This short series explores family. Our ‘sameness’ makes us comfortable with one another while our diversity of personalities refreshes our senses and offers surprise – and sometimes, conflict. We are a fabric tightly woven together whether we like it or not.

Historical Approach to Effective Leadership

Dustin Davis

Charles Lopez, University College

History is the best predictor and representation of what may or may not work in the coming future. In the past, there have been many individuals who have, through their leadership, changed and affected history and the world we know today. I will show four examples of influential leaders that may not be well known in our society and whom possess the qualities necessitated for those in a leadership position to be effective in both the short term and the long term. Konrad Adenauer, a German citizen in Nazi Germany who opposed the Nazi movement and was imprisoned in a concentration camp for his rebellious actions. Konrad went on later in life to become the first leader of Germany post WWII. Ataturk, who is known as the father of modern westernized Turkey, is the one responsible for legislation that separated the church and state ideology. As a result, it allowed freedoms to those whom were not equal in the eyes of the dominant religion to live with less restrictions on their lives. Tim Berners Lee, an English born technological revolutionary, laid the ground work for the World Wide Web and the freedom of and framework for international information and communication. He also continues to strive for free non-controlled or censored information to be available to the public. And finally, Bernard Montgomery, a British General who was responsible for the first offensive allied victory during WWII at El Alamein. He was well respected by his men and an advocate for the change of British military strategy.

I Am

Eric Davis

Katie Peterson, English

My abstract is a creative writing piece. Within this piece, I use different colors for different paragraphs or sentences. The reason I do this is because of the fact that most people have an emotion response to colors, which I manipulate to get the audience to have a deeper connection with the main character. The main character is James, who has quite an emotional distance from his father. He runs away from home to escape his father, because his father is emotionally, and sometimes physically, abusive. This is the reason why there is such a distance between these two characters. After James runs away, he starts reflecting on life. He reaches conclusions such as his father never cared for him, James himself was right to get out of the emotionally abusive relationship with his father, and that he is content. He talks about how everything makes people who they are, and that even though his father was emotionally abusive, that is why James is who he is. He then expounds on this and talks about the very different aspects of humanity, and how everything is intertwined with anything, and that even though bad things may happen, they make you, you.

Inlaid Ceramic Vessels

Whitney Evans

Chris Tyllia, Art

Clay for me is an extension of the body. It is the oldest form of manipulating nature and manifests in each culture around the world. I like to see inlay as a type of permanent marking, like a tattoo. Both the technique of tattooing and inlay puts the marker in a meditative state of concentration and control. The marks give each vessel its unique narrative and spirit that resonates with myself and my curiosity with clay.

Symbiosis

Douglas Gade

Jonathan Middleton, Music

Symbiosis is a piece based upon the symbiotic relationship between a clownfish, an anemone, and a type of algae. In this symbiotic relationship, the clownfish lives within the anemone for protection from their predators, thanks to the stinging organelles from the anemone. The clownfish provides water movement through the anemone, the removal of parasites harmful to the Anemone, lure prey close to the anemone, and provide protection from fish keen on consuming the anemone's tentacles. The anemone also has a symbiotic relationship with zooxanthellae (algae). The algae provides nutriment to the anemone through photosynthesis, and the Algae benefits by having a safe place to live. I then discovered several Amino-Acid Hydropathy plots of proteins from each of the organisms; these plots result in letter representations of segments of the proteins. From this, I was able to apply a pitch collection corresponding to each letter of the AAH plot. The collection I created was intentionally similar to the harmonic spectrum starting on G. This pitch collection allowed me to create a tonal sounding beginning that gradually grows more dissonant. This dissonance is due to the desire to show the affects a warming and carbon filled ocean are having on these relationships. It has been found that as the ocean warms the anemone begins to force the algae out, causing the anemone to become weaker. Due to this lack of sustenance from photosynthesis, in turn the anemone is "bleached" because without the algae's chlorophyll we see the anemones bare white structure. This also creates a harsher living environment for the clownfish.

Creating Music from Gaze Tracking Data

Tim Gales

Don Goodwin, Music

This suite of percussion pieces incorporates melodies derived from gaze tracking data. The data were obtained by tracking my own gaze while viewing a set of photographs, and a pitch-time grid was used to translate lingering gaze positions into musical notes. The resulting melodies were adapted through instrumentation and development to parallel the imagery depicted in each photograph. The suite is composed in a minimalist style that incorporates silence, emphasizing the ambience of the performance space.

First Day

Joel Gaytan

Greg Dumonthier, Art

This piece was inspired by a memory of a panhandler in Guadalajara, Mexico. I recall the man looking joyous even though he was missing half of his leg, which appeared to be amputated. I chose to portray him with a divine disposition, in which he is creating his own world.

Leading with Charisma!

Jarred Giampietri

Charlez Lopez, University College

This creative work will showcase my research and understanding of the "Charismatic leadership Theory" as well as all of the positive effects that charisma can have when it comes to leadership. This piece will showcase all of my findings and research as well as the positive effects of having a good strong healthy charisma and how it can make people better leaders.

McKenzie's Metamorphosis

Darlene Gibson

Jenny Hyde, Art

McKenzie's Metamorphosis is a collage depicting the death of a young girl and her release from pain. The composition includes pencil drawings, scanned images of the original drawing, as well as oil pastel.

The Soft Things

Rebecca Gonshak

Rachel Toor, Creative Writing

Since I started the MFA program at EWU, I've been working on a collection of personal essays examining different aspects of my obsessions: how men and women interact and need and use each other, how the pressure to be beautiful affects sexual desire and the relationship to one's own body, and how social anxiety and depression impact my way of being in the world. I tend to focus on quirky and esoteric observations in hopes that by pointing out the strange I can connect with the reader through the feeling of being an oddity. I'm influenced by the work of artists who use their own lives as their material, especially those who employ humor and self-deprecation. Some writers who have influenced me are Roxane Gay, Melissa Broder, Issa Rae, and Natalia Ginsburg.

It Goes With Age

Milo Harms

Chase Ogden, Film

A short documentary examining a woman's relationship to her parents through family photos and home videos.

Mirror Therapy

Sarah Hilsen

Dr. Beth Torgerson, Education

Monologue: Over the years, there have been different suggestions on how to address some of the things that I have been through. I found that the hourly rate on an uncomfortable couch was simply not for me. Medications only masked my problems and left me a vacant shell still harboring much of what I could not express. I couldn't look myself in the mirror. What I see is not what you see. I know what you don't and sometimes, it kills a part of what I cannot find within myself anymore. A fresh look on a woman looking at her own reflection on some of the important life changing moments and where they have taken her. Please understand that the content may not be suited for young children.

Window Gazing

Nahla Hoballah

Rachel Toor, Creative Writing

As an Egyptian writer studying creative nonfiction at EWU, I'm writing a collection of short essays about the idea of being a foreigner from different angles and perspectives. Some essays are more political, some more personal, some historical, and some social. Throughout my essays, I attempt to incorporate metaphors, similes, analogies, humor, and research to make my writing more approachable for an American audience. In this essay, that I'm submitting, I reflect on my experience and feeling about living on my own for the first time.

Soft Flat Scenic Painting

Malene Hundley

Shana Joslyn, Theatre

This piece is a painted 4'x8' soft flat. Soft flats are made by stretching muslin over a wooden frame using glue and paint, similar to a large canvas, and are used in stage scenery. This flat was hand stretched using techniques learned in class and painted using flat latex paint. The painting demonstrates both brick and foliage techniques frequently used in technical theatre.

Whole Nuts and Half Nuts

Maya Jones

Jonathan Middleton, Music

This composition was for an assignment to use a symbiotic relationship as inspiration. The symbiotic relationship I chose was between peanuts and the bacteria Rhizobium. I first input their protein data that I found on the NCBI website into Dr. Middleton's Music Algorithms program to find a generated output of pitches that I wanted to work with. I rhythmically set the peanut protein sequence as half notes and the Rhizobium protein sequence as whole notes and then came up with a way to randomly generate note durations to create a second melody. I continued the whole and half note melody under the second melody and they came together surprisingly well. I then experimented by repeating the second melody but starting the first melody a measure earlier.

Gender Role Representation in Teenage Television Media

Megan Jones, Carlisa Williams

Elizabeth Kissling, Communication Studies

Throughout television media, gender representation influences its teenage audiences consciously and subconsciously. When addressing gender roles most socially accepted within society, focusing on teenagers and their representation in the media it is crucial to understand how the audiences interpret and represent themselves as well as their peers. The representation of teenagers in dysfunctional families from three popular shows: Shameless from Showtime, Gilmore Girls from ABC Family and Pretty Little Liars also from ABC Family, these characters assume not only socially normalized gender roles but the reversal of such as well. Gender role reversal in teenagers who are required to act as adults due to the absence of parenting is portrayed - maternal and masculine roles are being juggled. Teenage femininity, as is societally expected, suggesting the only goal for young women is to get a boyfriend and to look good. With that, teenage femininity and new sexuality by using adult female characters cast as 16-year-old girls. The representation of teenagers in the media effects the actions of teenagers in society - how they look and dress, act, and what they assume is their role especially in families without parental guidance.

Ghost Towns

Chris Jordan

Chase Ogden, Film

A teenager's passion for exploration takes her back in time to earlier civilizations. Ghost Towns is a documentary about the exploration of decrepit places that once flourished and what it really means to explore and learn about past lives of the people who once called these places home.

Betrayed by Time

Travis Knickerbocker

Margot Casstevens, Art

This print was made using a recycled beverage can that was cut up and engraved using a steel dry point tool. The image was printed by using oil based intaglio ink on Thai Awagami rice paper. The process is derived from traditional intaglio methods but incorporates unexplored contemporary materials into the mix.

Objective Correlative in Creative Nonfiction

Lisa Laughlin

Rachel Toor, Creative Writing

My essay makes use of an objective correlative, an object associated with a theme or emotion in the text that says something without directly saying it. This craft move can be a useful way to gain distance when the emotion of a subject is hot, such as the narrator's contemplation of a baseball as a means to explore the grief of his brother's death in David James Duncan's essay, "The Mickey Mantle Koan." Many nonfiction writers have employed the objective correlative in their essays: Richard Seltzer, John McPhee, and Virginia Woolf are just a few. This artistic technique works because it focuses on something small to say something big; it establishes the universal in the everyday. The essay I present uses an object (boots) to define a person while also standing in for something bigger (dryland wheat farming).

Holy is Hot

Stephanie Lunt

Jenny Hyde, Art

This mixed media piece features some ideas that challenge and comment on both conventional and irregular Christian beliefs. The ideas discussed include those about a woman's place in a Christian based relationship according to the repurposed book. The garish colors and brash content are intended to parallel some of the extreme concepts of the book itself. The materials used include colored pencil, graphite, and ink.

Mass Accountability

Dustin Meehan

Chase Ogden, Film

This piece explores what journalism has become after the 2016 presidential campaign. It also stresses the necessary actions for regular people to fact-check what they share on social media.

The Teal Door

Skyler Moeder

Shana Joslyn, Theatre

This 4"x8" soft flat was hand stretched and painted with latex. Painting techniques such as brick and foliage are demonstrated with the picture. To stretch a flat you just take muslin, glue it to a wooden frame, and then put glue on the top of the Muslim. The glue not only keeps the flat together but also stretches the flat as it dries.

Tranquility Pool

Jessa Morissey

Tom Askman, Art

Growing up in a house where tall trees towered above us, I was always caught staring up at them in wonder. Amazed at the strength that they had, swinging back and forth in the wind. I wanted to draw from that feeling of amazement, and put

in into this artwork. Maintaining the integrity of the wooden material, this painting was created with acrylic paint and oil pastels. By combining an unconventional shape with continuous circular movement, a meditative and euphoric environment is created for the viewer to get lost in.

Seeking Home: A Texan's Story

Lydia Mulligan

Natalie Kusz, Creative Writing

What does it mean to be homesick: Often in art we use a concrete metaphor or image to stand in for an abstract concept that is hard to understand such as love, war, death, or disease. In this personal essay the questions of loneliness and homesickness are seen on a backdrop of family dynamics, travel, and legacy using a suitcase, cardboard boxes, and the Texan accent to stand in for loneliness and striving. With influences such as Joan Didion, John Jeremiah Sullivan, and Gail Caldwell, I work to bring the spirit of Texas to the page through detailed description, colloquial language, and personal experience.

Complexity

Katelyn Reed

Jodi Patterson, Education

This piece is an exploration of the structure of physical and visual imagery through intuitive and abstract mark making. It reflects some of the detail and mystery involved in the natural world around us, while remaining open-ended as to the subject matter. The vibrant colors help to emphasize the complexity and beauty that is life.

Revelation

Marissa Saily

Ginelle Hustrulid, Design

A series of 3 abstracted photographs of paper. The central theme is through the darkness, there is always light. I wanted to show that we all live in darkness and sometimes when we try to push ourselves to see the light at the end of the problem, we will begin to succeed and lead a brighter life.

"Mime" Autodrama

John Siebel

Sara Goff, Theatre

A 10 minute abstract performance written and performed by John Siebel.

Revoked

James Strampher

Yaro Neils, Art

The freedom to criticize our government is enshrined into the First Amendment of our Constitution. However, all too often citizens are criminalized for exercising that very right. Protestors, whistle-blowers, and others who speak truth to power are locked away on trumped up charges. Over the decades our government has become so corrupt that it is no longer a functioning democratic republic, rather an oligarchy that protects the rich and political class at the expense of our citizenry. These black and white images were created using a 35mm film camera and developed on silver gelatin photographic paper. By distressing the negatives, I was able to create gritty politically charged images.

Sculpture

Erik Sullivan

Tom Askman, Art

In this sculptural artwork I wanted to explore the human condition and the instinctual patterns of human behavior when we give in to our curiosities. As an artist I believe it is essential to explore those realms of curiosity and to avoid the forever analyzing rational mind.

Heroica

Nathan Sumerlin

Don Goodwin, Music

Heroica is a string quartet, two violins, a viola, and a cello. The concept of the piece pokes fun at the lack of creativity in creating an "origin story" of most popular superheroes. The piece follows a method called Program Music. If given a prompt or list of events in the story, a listener will be able to follow along with what is happening. Through the course of the the piece, I go through the common story that most super heroes have nowadays. In the end, it turns on itself and shows the never ending cycle that these characters are in.

Contingency

Nathan Sumerlin

Jonathan Middleton, Music

My piece follows the adventure of two best friends from a small, quiet town in the countryside. As they get further away from home, their motivations for leaving on this adventure become more clear. The piece follows a process called Program Music, and if given a prompt or a list of events, listeners would be able to follow along where in the journey they are. The duo travels through different parts of the world, through mountain ranges to great planes, eventually returning back home to where they started their great journey. The orchestration will feature two cellos as the two best friends, and potentially a few other strings as well.

Northwest Boulevard Readers

Virginia Thomas, Tessa Bryant, Doralicia Mendoza, Katie Tonellato

Rachel Toor, Creative Writing

As one of the Graduate Student Advisors of Eastern's undergraduate literary magazine, Northwest Boulevard, I will be leading a group of readers who have either worked or written for the magazine. Northwest Boulevard publishes Eastern's undergraduate student and alum work in fiction, poetry, creative nonfiction, and art in an annual magazine run and created by Eastern undergraduates. These students work hard to raise funds for the magazine, choose selections for publication, and design the magazine from cover to cover. In these readings, we support that work and hope to spread the word to undergraduates and alum that there is a place to publish their work and an opportunity to learn the basics of literary magazine publishing.

Psychology of the Transformational Leader

Cierra Thompson

Charles Lopez, University College

This poem examines the psychology of transformational leadership. In other words, the study of the mind and behavior of those who strive to instill the qualities of a leader within a follower, in order for that follower to then become a leader. It is my personal observation that both the idea and practice of transformational leadership is very pronounced in some areas, and unfortunately, very lacking in others. Are too many of us too willing to follow, when what would better serve us as a community would be to help each other lead?

Watch Me Disappear

Rashad Tyson

Chase Ogden, Film

My short film is intended to bring attention to the growing displaced and homeless adolescent in Washington state. Through the narrative, I hope the audience can visualize this in an interesting way and understand the out of sight, out of mind scenario I intend to present.

Sechelt

Lisa Veitch

Frederick Strange, Anthropology

20-page fictional story about a small group exploring San Juan Island between Washington State and Vancouver. Synopsis: Animated fictional slide presentation with a background in the San Juan inlet, Seattle Sound, and Pacific Northwest. The characters look for caverns and explore the beach and volcanic rock off Lime Kiln Lighthouse. The currents are high, and the landing rough. The travelers saw wildlife caring for their young. The travelers camped on the beach, nursing injuries and recovering from the day's sailing. Corey seeks the apparitions he's met from time to time during his travels to the islands with his family. Description: The media affords a relaxing background for presenting a fully-developed short film for entertainment. The project demonstrates the value of the technological innovation and its applications in home and business applications.

Bird of the Red Maple Tree

Diana Viskova

Jonathan Middleton, Music

"Bird of the Red Maple Tree" is a composition that features a symbiotic relationship between two instruments. One type of symbiotic relationship is commensalism: "one species benefits. The other species is unaffected. A common example is an animal using a plant for shelter. An American Robin benefits by building its nest in a Red Maple tree. The tree is unaffected" (Symbiosis). This excerpt became the basis of the composition. The flute represents an American Robin, and the clarinet represents the Red Maple Tree. Chirps are represented by grace notes which accent eighth notes. Since a symbiotic relationship conveys a special type of interaction between two specific species, I have created two voices that complement each other, but the clarinet (representing the tree) is more independent. I also set a bright and happy mood to the piece in order to portray the impression of a joyful bird singing in the maple tree on a peaceful summer day. Source: "Symbiosis." Symbiosis. N.p., n.d. Web. 01 Dec.2016.

Lidded Jars

Katrina Walker

Elisa Nappa, Art

Ceramics is a combination of function and aesthetics. I have made three lidded jars with the intent of showing how ceramics can be both beautiful and purposeful.

Oral Abstracts

ADA Transition Plan For Public Rights-Of-Way for City Of Othello, WA

Michelle Abunaja

Alex Mann, Urban & Regional Planning

The purpose of the project was to prepare and implement the federally required ADA Transition Plan for Othello, Washington's Public Works Department. This plan focuses on sidewalk ramps based on collected data to identify the ramps which need to be replaced immediately. The Transition Plan creates priority projects to assist the City in complying with Title II of the ADA, making public services and public transportation accessible to those with disabilities. The ADA requires that cities create and implement a Transition Plan to fix ramps that are out of conformance. I established a three-tier prioritization strategy for addressing barrier removal in the public rights-of-way. First, the creation of criteria to rate sidewalks included: street use, slope condition and barrier, and facility among other factors. Second, the sum of the criteria was then applied to a formula to create a level of disconformity (LOD) number. Third, the LOD numbers were sorted by street to identify street priority projects with the highest need and greatest LOD. The proposed street priority projects based on the LOD numbers were 7th St south of Main St and Ash St. Overall, this method was used to schedule elimination of barriers to accessibility of non-compliant ramps.

Nietzsche & Stoicism

Braden Agueros

Terrance MacMullan, Philosophy

With knowledge of Nietzsche's classical interests and his passion for understanding the origin of prejudices in Western Philosophy, two questions arise: what systems did Nietzsche find agreement with? Also, given his argument for experimental morality, which systems did Nietzsche try his hand at? It would be quite the difficult task to systematize a singular understanding of a philosopher of such breadth, let alone what he acted upon in his own ethos. Similarly, classifying him as only a philosopher misses his poetic, critical, and psychological gifts and their subsequent influence. It is a finer thing, though, to trace out the elements of Nietzsche that will consume much of his thinking. One such element is his developing conversation with Stoicism. That it is a "development" for Nietzsche comes by way of Stoicism's increasing occurrence in sections of his late works, culminating in the famous Section 9 of Beyond Good and Evil, On the Prejudices of Philosophers.

Fecal Coliform Levels In Stormwater Fed Cannon Hill Park Pond Significantly Increased Following Rain Events

Veronica Albrecht

Andrea Castillo, Biology

Cannon Hill Park Pond (CHPP), Spokane, WA is a residential pond that has historically been maintained by the continuous input of potable water. In 2010, as part of the Spokane Urban Runoff Greenways Ecosystem project, a vegetated bio-filtration cell (storm garden) was designed to capture and filter storm water and direct its flow to CHPP via a storm drain. This project was meant to mitigate storm water and sanitary sewage overflow during storm events and contribute to CHPP water levels. While the City of Spokane has conducted chemical analyses of CHPP, they have not conducted any fecal coliform (fc) testing. We were interested in comparing fc levels in CHPP to levels allowed by the Washington State Environmental Protection Agency (WA-EPA) and in determining if fc levels increased with rain events as a result of storm water input from the storm drain. To address our questions, we used a membrane filtration method and cultured filters on mFC agar to identify fc bacteria. We sampled three different pond sites: directly in front of the storm drain, from the potable water spigot, and an offshore site >10m from the storm drain. We sampled CHPP weekly for 15

weeks (10 non-rain events, 5 rain events) and determined that fc levels at the storm drain and offshore site exceeded WA-EPA levels. Additionally, we found a significant increase in fc at the storm drain and offshore sites following rain events ($p=0.0001$ and $p=0.0005$, respectively). We did not detect fecal coliforms in our potable water samples.

Bell Hooks' "Interrogation of Oppression": Reflections on a Saudi Widow's Life

Braik Aldoshan

LaVona Reeves, English

This paper is an analysis of a rhetoric of resistance. In Saudi Arabia, it is common for a widow to give up her children to her brothers-in-law and to remarry, but in this auto-ethnography, I reflect on being raised by a young mother who defied all odds and resisted the expectation. Having married in her early teens, giving birth to three children, and expecting another child, my mother became a widow and single parent to her eldest child who has a disability, two others, and a newborn. She chose to keep us and not remarry, which meant she was taken to court regularly for the first year after my father's death, but she did not give us up and remarry. "Decolonization means more than simply engaging in the critical interrogation of oppression. It also requires an envisioning and development of 'new habits of being, different ways to live in the world' in bell hooks' words, and this is what my mother did--engage in critical interrogation of societal expectations and tribal pressures. hooks argues that the "primary means of creating non-dominating alternatives is enactment" and she asserts "that interactions with family members provide an important arena for enactment," as my mother did. Further, hooks insists that "parent-child interactions offer another opportunity to enact non-dominating ways of living" (282), and this is what I experienced as I tried to help my mother and fill my father's shoes when he died. At the same time, my mother modeled an "enactment of non-domination" as a member of an "oppressed group", and did "practice speaking in a loving and caring manner" and this worked.

Cherokee Women's Subversive Literacy and Caliban's Linguistic Weapon: World Englishes and Resistance to Imperialism Through Appropriation

Logan Amstadter

LaVona Reeves, English

This paper is an analysis of resistance to colonization through appropriation of the colonizer's language, manifest in two cases: nineteenth-century Cherokee women's efforts to attain English-language literacy at missionary schools in order to protect their people and their territory from an expanding American empire; and Caliban, the indelible character from Shakespeare's *The Tempest*, who learned the colonizer's language and used it as a tool to resist colonial authority. In both cases, indigenous peoples had the insight and the aptitude to appropriate the language of the colonizer – to make it their own – and empowered themselves by it with the agency to negotiate in the dominant discourse. The paper extends this application into the realm of World Englishes and the implications of this concept in TESOL. Paradoxically, nations all over the world have not rid themselves of the imperial language (English) but have appropriated it for their own purposes. World Englishes are thus manifestations of this discursive resistance; they are localized innovations which protect cultural identities in an increasingly globalized world. As people on the streets of New Delhi, Manila, and Nairobi, or in composition classrooms in Colombo or Kingston, speak and write the Englishes that are functionally appropriate in their cultures and peppered with the syntax and vocabulary of their local languages, and by code-meshing in classrooms and in academic discourse, a new class of postcolonial writers and teachers are questioning the relative status of World Englishes in TESOL and the hegemony that "standard" English enjoys.

Physiological Effects of Virtual Reality

Elaine Appleby

Jonathan Anderson, Psychology

The present study examined whether we could manipulate an individual's body temperature using Virtual Reality (VR) as the goal of VR is to give the perception one is actively interacting with the virtual environment (Fox, Arena, & Bailenson, 2009). The present study used the Oculus Rift to immerse participants in the 2011 fantasy-role playing game Skyrim to examine the effects of VR on a participant in two conditions: a snowy blizzard environment and a calm forest environment. A non-contact infrared temperature gauge was used to measure temperature during each trial. Surveys were also taken to gauge participants' subjective experience of temperature (i.e., 1 = I feel cold to 5 = I feel hot). Results revealed no significant change in biometric temperature readings by condition, but did show a significant interaction between perceived temperature and condition, $F(1, 21) = 4.53, p = 0.05$. This suggests individuals perceived a significant temperature decrease during the snow condition compared to the forest condition. Overall, these results suggest VR can have a subjective effect on people, indicating a usefulness in clinical settings where it is desired to create a mental effect for environments not otherwise accessible.

The Impact of Teacher Diversity on Students

Yesenia Aquino-Bautista, Gladys Flores, Esmeralda Garibay, Ivonne Espino

Angela Schwendiman, Africana Studies

We collected data and evidence to showcase the positive impact a colored teacher has in children. Our research consists of history, teacher bias, teacher-student ratios, and social experiments. Within this we establish how teachers of color provide better academic results for students of color because there is common ground that establishes a connection between them. However, our results indicate there is not sufficient colored teachers to provide this. Our teacher-student ratio graph informs us that for the amount of colored students we have in some states there is not sufficient teachers to represent them, however for the white students there is more teachers than needed to represent them. This ultimately suggests why majority of colored students perform academically poor. We believe students who are not provided with teacher diversity can be at risk of performing academically poorer due to lack of connection and teacher bias because sadly racial biases in teacher's behaviors do exist. In sum, the nature of the relationship between the student and teacher is crucial and it can make a positive impact on the students.

A Macroinvertebrate Bioassessment of Two Streams on Turnbull National Wildlife Refuge

Sultan Areshi

Camille McNeely, Biology

This study assesses changes through time in the water quality and ecosystem integrity of two streams on Turnbull National Wildlife Refuge (TNWR), Cheney, WA over a 10 year period (2007-2016) through monitoring invertebrate communities. TNWR contains over 3,000 acres of wetlands, and provides high quality waterfowl habitat. However, these wetlands are impacted by high nutrient levels and invasive fish. I focused on the Company Ditch and Pine Draw watersheds. Company Ditch has historically had very high nutrient levels and low water quality. Pine Draw includes the only perennial stream habitat on TNWR. This stream has high densities of invasive brook stickleback and experiences nutrient loading. Both streams were assessed in 2007, 2008, 2010, 2011, 2013, and 2016. Invertebrate species, physical habitat, and water quality differed among sites and years. Water quality clearly improved in the Company Ditch during 2008-2011 following the closing of the dairy. Water quality has declined in one seasonal Pine Draw site, but remained more consistent in the permanent Pine Draw sites.

A Comparative Study of Total Motion Release and Proprioceptive Neuromuscular Facilitation on Hamstrings Tightness

Michael Ballasch, Hannah Gates, Leah Wheaton-Straub

Garth Babcock, PEHR

Total motion release (TMR) is a technique used to increase range of motion by targeting the opposite side of the body. The technique uses a series of dynamic repetitions of shoulder flexion, lateral trunk twists and hip flexion as well as isometric holds in these three movements with no resistance on the unaffected side, then the opposite side is rechecked to see how it responded (TMR Improves Strength, Balance. 2016.). The technique is based upon the idea that weakness comes from a balance discrepancy and not a strength deficit, and that if you realign the balance of the body, weakness is corrected. Previous research on TMR is minimal, but what research has been done has shown that TMR does have a positive effect on ROM. However, previous research has failed to compare TMR with any other type of technique, and therefore, is limited. The goal of our study is to address some of these limitations in order to validate the use of TMR. We plan to compare TMR to proprioceptive neuromuscular facilitation (PNF), which is considered by many to be the gold standard of stretching techniques (Barta, 2014). We will be testing hamstring flexibility in 20 participants, and randomly assigning them to a TMR, PNF or placebo group. Performing a study in an area that has just begun to be researched will contribute to the growing body of research in this area, and give healthcare providers justification for using this technique.

Water Bottles: A Sociological Approach

Sarah Baune, Madi Casto

Dori Roberts, Sociology & Justice Studies

Consumption of bottled water has become a global trend. Created as a convenient and healthy option for consumers, the rising demand for bottled water threatens not only the environment, but also those living near the precious resource. A growing body of research continues to show the adverse impacts of bottled water on the environment. However, only of small collection of studies seek to understand the sociological impacts of bottling water. Interestingly, in blind taste tests around the United States people were unable to determine the difference between tap and bottled water. We asked ourselves; what continues to drive the bottled water trend and what impact does this have on society? This presentation seeks to explore the social perspective of bottled water and how that impacts both the cultures located near bottling plants and those who consume the water.

Venezuela's Economic Crisis

Alberto Felix Beltran

Kristin Edquist, International Affairs

Venezuela, once a robust economy in Latin America, has changed since Hugo Chavez was elected president in 1999. The country has become more dependent on its oil exports, it has increased the government expenditures in social programs, and its non-oil industries are almost irrelevant. These changes characterized as “excessive socialism” created an economic bubble which burst with the recent drop in oil prices, exposing the weakness of its non-oil infrastructures and industries. Venezuela also failed to meet its goals on the regional front as a member of MERCOSUR – a regional alliance formed for economic growth and development of the region. The alliance became more of an institution to voice political ideals rather than economic development. This issue often brought tension between the members, and economic alienation of Venezuela towards its neighbors, instead of working towards the common market that MERCOSUR was designed to be. These aspect created extreme inflation, high unemployment rates and cuts on social programs. This paper analyzes Venezuela’s dilemma in going forward to revert its economic decline, and argues that it should target two specific fronts. For the domestic one, Venezuela must reform its economic policies by encouraging Foreign Direct Investments (FDI), diversification of its economy, and the structural changes that China did decades ago by opening up to FDI, while protecting its national interests. One way of doing so, is by protecting against massive repatriation funds, while giving

those investors protections and guarantees, while reducing government overspending. The second front is regional, and I argue that Venezuela should look at the Pacific Alliance (PA) for investments partnerships and mentorship. Ultimately I use economic reports and analysis produced from scholars in different locations in Latin America and Europe to argue that non-oil-dependent economic growth is achievable in Venezuela if the country continues to diversify and open up its markets to the world.

Relationship Satisfaction and Infidelity

Michael Bernal

Theresa Martin, Psychology

Abstract: The purpose for this study is to see if low levels of relationship satisfaction of people in their current relationship are positively related to infidelity. A survey was given to 50 participants with locally developed questions measuring relationship satisfaction on a 5 point Likert scale; as well as, whether or not individuals have been unfaithful to their intimate partner or not. An independent T-test was conducted comparing the difference of the two means. Although the results showed no significant difference. However more accurate results may be obtained in future studies with a greater number of participants.

Efficacy of Using Temperature, Pheromones or Natal Stream Water to Improve Attraction of Fish to Fish Ladder Entrances

Ashley Bromberg

Paul Spruell, Biology

Dams constructed without fish ladders on the Pend Oreille and Clark Fork rivers (ID, MT, WA) block upstream migrations of native Bull Trout, a federally threatened species. The U.S. Army Corps of Engineers recently funded a fish trap with a Denil-type ladder to capture bull trout below Albeni Falls dam and transport them above it. Although several radio-implanted Bull Trout have passed within 2m of the ladder entrance, none of them entered the ladder. The present study was undertaken to determine if attraction of Bull Trout into fish ladder entrances could be improved by using cold water, fish pheromones or natal stream water (NSW). We used Brook Trout as a *Salvelinus* surrogate for Bull Trout to test fish in a Y-maze. We tested six null hypotheses: 1) No preference for arms with warm (14oC) and cool (10oC) water; 2) Arms of same temperature; Two arms with the same water one of which received 3) conspecific pheromones (CP) or 4) population specific pheromones (PSP); 5) Two arms with the same water (with CP added to one and PSP added to the other); 6) Two arms with the same water with one containing a dilution of 1-5% NSW. Brook Trout preferred arms with warmer water ($p \leq 0.001$), CP ($p \leq 0.05$), PSP ($p \leq 0.001$), and NSW ($p \leq 0.001$) but showed no preference for arms with water of the same temperature ($p \geq 0.05$) or when CP was added to one arm and PSP to the other ($p = 0.796$), suggesting that Brook Trout cannot distinguish between CP and PSP. These results indicate that addition of CP, NSW and cold water might possibly be used to attract Bull Trout into fish ladder entrances.

The Effect of Energy Transfer on the Shape of an Electromagnetic Field

Boaz Brown, Chriss Leech, Jake Herval

Mark Gorski, Community Colleges of Spokane

An electromagnet is capable of exciting the molecules contained within a fluorescent tube, causing it to emit light; however, it is unknown whether or not this energy transfer changes the shape of the electromagnetic field. A change in shape would suggest that a non-magnetic object is capable of manipulating an electromagnetic field. Using a "ferrocell," or a thin layer of ferromagnetic fluid compressed between two pieces of glass, we will observe the shape of the electromagnetic field. The ferrocell will be set near the electromagnet so that it can clearly display the magnetic lines of force. The current and charge will be kept constant. Without moving either the electromagnet or the ferrocell, we will document the lines of force both with and without the fluorescent light. By observing the lines of force through the

ferrocell, we shall be able to determine the effect that this type of energy transfer has on the shape of an electromagnetic field.

Advanced Robotics Vision Robot

Thorin Brown, John Gunderse, Kari Hamilton

Don Richterj, Engineering

Our Undergraduate Research team created a robot program and work space using passive compliance and a delta style robot to mimic a pick and place industrial application. The robot uses a vision system to “see” a block with letters on it. There are 13 total blocks that eventually spell “EWU ROBOTICS” with 2 “throw away” blocks. The Undergraduate Research robotics project demonstrates vision by throwing away letters that are not needed and places letters that are needed in specific places. This Undergraduate Research project shows skills in programing, robotics and specifically robotic vision which is a growing field in Engineering and important to the future of industry. We will present a video of our Undergraduate Research robotics project working through its program to demonstrate and we will be prepared to speak on the subject.

Online Dating and the Uses and Gratifications Theory

Lindsey Bryden

Galina Sinekopova, Communication Studies

Online dating has become an intricate part of today’s society, especially for the younger generation. Now, more than ever, it’s accessible by the click of a button because online dating has gone through an evolution and is now readily available on a person’s mobile device. The most popular online dating applications are Tinder and Bumble, both strictly on mobile devices. This paper seeks to examine how the Uses and Gratifications theory can be applied to online dating. Although the Uses and Gratifications Theory revolves around the idea that individuals seek out media to fulfill their needs and lead to ultimate gratification, surprisingly little research specifically explores the ways it can be applied to online dating. This study examines the common themes of seeking attention, gaining self confidence, and passing time as well as gender differences in identity representation on online dating. For this purpose, an online survey was created based around this theory. The survey was administered to 190 respondents aged 18 and older from the Northwest regions surrounding Eastern Washington University. The implications of this research are to better understand how the future of social interactions can look like, and how online dating applications either hinder or enhance the way individuals express themselves.

Comparison of Low-Dye Arch Support and Kinesiotape Arch Support

Kayla Clauson, Carli Robins, Noah Dorr

John Gerber, Physical Education, Health & Recreation

Melanie Ferri (2008) determined there was a significant difference between normal and pes planus feet with regard to forefoot arch angle in the non-weight bearing ($p=0.02$) and weight bearing ($p=0.01$) states. This difference in angle often leads to more movement in the tarsal and metatarsal bones. The excess movement can lead to other lower extremity injuries, such as plantar fasciitis and shin splints. The standard tape procedure to limit tarsal and metatarsal movement is the low-dye taping procedure (Newell, Simon, Docherty, 2015). However, the low-dye taping procedure is rigid and restrictive. It uses a non-stretch tape and can be uncomfortable for the athlete. Kinesiotape, a stretchable tape also has an arch support procedure, which has the potential to be less restrictive and more comfortable. The purpose of this study is to compare patient perception using both taping techniques related to comfort, support, and effectiveness.

The Dividing Line Between Us: An Analysis of the "Actualized Self" in Henry James Novellas

Julianna Crame

Anthony Flinn, English

My presentation compares two Henry James' novellas, *Daisy Miller: A Study* and *Washington Square*, using a social constructivist perspective to identify James' presentation of the actualized self in contention with discourse and hegemonic pressures. In this context, I define the actualized self as a dynamic, constantly renegotiated sense of identity that simultaneously juxtaposes and draws the line between an "authentic self," sense of self defined outside of the hegemony, and the social forces that shape one's views. For my purposes, I define discourse according to Michel Foucault and hegemony according to Antonio Gramsci. By comparing the female protagonists' struggles with societal expectations and their journeys to discover their identities, I will argue that self-awareness is needed to realize one's actualized self because it enables a detachment from controlling hegemonic pressures. This self-assertion of being both a part of and apart from the hegemonic discourse begets a sense of actualization or coming into being. By analyzing how Daisy fails to realize her actualized self while Catherine succeeds, I will argue that an individual's actualized self is articulated by acknowledging that she is constantly reshaped by the world around her but also by recognizing the fundamental aspects of herself that cannot be redefined. The different presentations of Daisy and Catherine demonstrate a need for both a separation from social forces that attempt to redefine an individual's conception of themselves and an awareness of these forces to promote continued personal growth.

Adverse Childhood Experiences and Sexual Assault

Kimberly Earl

Bipasha Biswas, Social Work

Background: This paper explores the relationship between a person's Adverse Childhood Experiences (ACEs) and the likelihood of their becoming a victim or a perpetrator of sexual assault. Victimization and perpetration of sexual assault in the United States are extremely prevalent, and both victims and perpetrators face negative attitudes and biases in society. The purpose of this paper is to address these biases as well as discuss the specific adverse childhood experiences that are prevalent among both groups. **Methods:** This paper utilized literature review and critical analysis, by synthesizing information from pertinent literature, and citing resources and ideas for treatment of both survivors and perpetrators of sexual violence. **Results:** The results demonstrate that the likelihood of becoming a survivor or a perpetrator of sexual assault increases as a person's ACE score increases, and sexual abuse at a young age is the most predictive of these. **Conclusion:** A strong attachment relationship would serve as a protective factor in both victims and perpetrators of sexual assault and knowledge of attachment theory and cognitive behavioral therapy is ideal for treatment. This paper will inform future social workers and broaden the general understanding of ACE scores and how they pertain to the social problem of sexual assault.

Addressing The Gaps In Services And Supports A Comprehensive Regional University Offers Students Who Have Experienced Trauma.

Ashley Ellison

Susan Ruby PhD, Psychology

Trauma can be understood as any event that is physically or emotionally harmful or is life threatening. Prolonged trauma has been determined to have lasting adverse effects on an individual's mental and physical health. Several studies, such as in the Kaiser Permanente's CDC study, have shown the influence of trauma on the lifespan and mental and physical health of an adult. Adverse Childhood Experiences (ACEs) include but are not limited to, five personal traumatic experiences: personal abuse, verbal abuse, sexual abuse, physical neglect and emotional abuse. ACEs also include five traumatic

experiences involving family members: alcoholic parent, mother is a victim of domestic violence, family member in jail, family diagnosed with mental illness, disappearance of a parent through divorce, death, or abandonment. Scholars note a lack of support in higher education services for college students experiencing trauma. A majority of the research on trauma and ACEs has focused on the k-12 public school system. As such, for my study I plan to assess the need for trauma based services in higher education by investigating the prevalence of students at a comprehensive regional university reporting a significant level of trauma exposure. I will also investigate what services and supports a comprehensive regional university offers to students who experienced trauma. I plan to administer ACEs and a Resilience survey to students in general requirement courses. I will invite those who score above a five on the surveys to join a focus group to better understand their perception of trauma informed practices in higher education.

Reading the Romance: Through the Eyes of A Millennial Feminist

Jessica English

Galina Sinekopova, Communication Studies

The consumption of romance novels is vast, far leading the literary industry, with millennial readers are the second largest consumer group. Similarly, we continue to see an ever-increasing embrace of feminist ideology, even if that does not always correlate to self-identifying as feminists. This paper seeks to examine the interrelationship between these two popular parts of American culture, with particular regard to the millennial generation. How exactly does the popularity of romance novels and the increase in feminism ideologies correlate for millennial consumers? This exploration is done using a feminist theory lens and a mixed methodology approach. Using feminist theory allows an examination to be done of both the concept of romance novels themselves as feminist works and the act of reading romances as a feminist act. This juxtaposition of a social theory and a literary genre is one that was previously studied often, but in recently history has been overlooked. A survey was created using both feminist theory and existing research that was a quantitative analysis of participants that either identify as feminists or have, either in the past or currently, read romance novels, and their thoughts on the intersection of these two things. 135 participants aged 18-29 primarily came from the Northwest area of the United States. Implications from the results of this research can be used to further examine the societal and social influences of feminist theory and its impact and influence on empowering modern day men and women.

Heritage Language Maintenance: A Mexican American Mother's Success Story

Maria Estrada-Loehne

LaVona Reeves, English

This is a single case study of an octogenarian Mexican American single mother who raised her children bilingually in the United States, creating diglossia--with Spanish spoken at home and church and English spoken in school and community as recommended by Hakuta and others. Trained as a teacher in Mexico, this mother brought her children to full cultural literacy as well as bilingualism by practicing heritage traditions and speaking the heritage language exclusively with her. Through extensive interviewing this past year, I report on the themes in her stories, analyze the decisions she made, and discuss the success of her children. At the same time, I review laws that were passed during her lifetime, insuring the maintenance of Spanish and the acquisition of English for those in public schools. Like Anzaldua and other successful Mexican American scholars, the subject was highly motivated to be educated and to educate her children despite the fact that her own mother died young, leaving her to be raised under difficult conditions. The sources of her resilience are identified and discussed.

The ACEs' Effect on Depression

Danielle Evert

Bipasha Biswas, Social Work

Background: The Adverse Childhood Experience study, or the ACE study was initially developed in 1995 following Kaiser Permanente's Department of Preventive Medicine observation that many of those who dropped out from the services offered from the Kaiser Permanente's Obesity clinic had experienced similar childhood traumas. This study looks into ten different adverse childhood experiences to examine health outcomes as they correlate to these experiences.

Objective: I examined how the number of these ACEs correlate with the prevalence of depression. Methods and Results: I analyzed existing research on these topics and discovered correlations between what different researchers found.

Conclusion: I found that the more ACEs an individual has, the more likely they are to experience depression at some point in life. I presented these findings from my own research and comparative studies with the caveat that the ACE score is only predictive of negative health outcomes, rather than prescriptive, from a strengths based perspective.

Pseudo-random Weight Training for FPGA Implemented Combinatorial Logic

Perceptron

Brett Fielding

Kosuke Imamura, Computer Science

Combinatorial Logic Perceptrons perform extremely fast neural computation. The arithmetic is based on tally-number-numeration, an ancient primitive counting scheme. The computation time is less than two sequential integer add. The CL-perceptron is specifically designed for embedded real-time applications in physically harsh computational environments for execution speed and data-error resiliency. The CL-perceptron was previously prototyped on a Field Programmable Gate Array (FPGA). This work expands on the existing model (which previously was implemented with hard-coded weights that were known to generate an XOR result) by implementing pseudo-random weight generation to train the CL-perceptrons to generate the desired XOR output from the inputs passed into them.

A "War on Obesity" or Our Patients: Weight Bias among Healthcare Providers

Grace Flora

Meryl Gersh, Physical Therapy

Healthcare providers are aware of what has been termed the obesity epidemic and the challenges of providing care for a population with larger bodies. The related topic of weight bias is rarely disseminated among institutions and often remains an unrecognized yet common occurrence for our patients. While discrimination based on gender, race or sexual orientation is unacceptable, discrimination based on body size occurs regularly and is still accepted within the framework of one's 'health.' This presentation will review the literature on weight bias among health care professionals and provide suggestions for a paradigm shift within health care fields. Weight is a contributing factor in an individual's health equation, but how does weight affect the care one receives? How can we approach weight and health without inadvertently stigmatizing our patients? How does a focus on physical activity rather than weight loss enhance the role of physical therapists and our scope of practice? Guided by the ethos to first do no harm, we are ethically obligated to consider the implications of recommending treatments that may be ineffective or damaging. Acknowledging that health improvements can occur in people of all sizes independent of weight change is imperative. As physical therapists we provide a disservice to our patients when we focus on arbitrary weight loss expectations. We should instead advocate for health enhancement through joyful, sustainable physical activity, and move forward.

The Prevalence of Gluteus Medius Weakness in the Average Population

Olivia Frangos

Garth Babcock, Physical Education, Health & Recreation

As we complete daily activities, our body instinctively operates, however, this does not guarantee that they are “correct” movements. Our body automatically responds and compensates to internal and external stimuluses as needed, resulting in this possibility of incorrect movements. In this study the following concept of improper kinematics is applied, but with a focus specifically on the influence of the gluteus medius. Surveilling the population, there seemed to be a trend in symptoms that reflected weakness of the gluteus medius. With that observation, I decided to conduct this study to determine if gluteus medius weakness is in fact prevalent to improper alignment in the lower body’s kinetic chain in a randomly selected public population. The study aims to answer if there is weakness and then, if it is obvious in dynamic movement or only when quantitatively measuring? This base research has potential to develop further into more specific aspects the topic and how it relates to other factors like injuries, life style habits, genetic predispositions, and more.

The Albanian Sworn Virgins

Amanda Gardner

Julia Smith, Anthropology

Gender categories and who should fill those roles vary in different cultures. In northern Albania, there is a gender binary: male and female, with a strong emphasis on the importance of males. Because of their highly patriarchal society, the male practice of blood feuds, and war, there was a need for a third gender category, known in English as sworn virgins. When there are no suitable males to take on the role of head of house for the family, an unmarried female is selected by her family and the community to take on traditional male roles and protect the family’s honor. Over the past century, historians, travel writers, sociologists, and anthropologists have all written about females in this area becoming ‘social men’. Examining their accounts of sworn virgins using modern theoretical ideas about gender gives us a better understanding of gender categories within this society but also a broader understanding of traditions and beliefs that have existed here for centuries. Bringing this knowledge together is important as sworn virgins are beginning to disappear due to increasing globalization and influence of Western culture as well as work by feminist movements to create more equality among the sexes in Albania.

Quality of Healthcare and Economic Class

Nichole Gibson

Theresa Martin, Psychology

The purpose of this study was to test if individuals who belong to a higher socioeconomic status would report higher levels of satisfaction with the quality of healthcare provided to them than individuals who are from a lower socioeconomic status . A total of 67 participants were sampled. Participants completed questions from a locally developed satisfaction survey and answered questions about their current socioeconomic status which included questions about the type of health insurance people had. This study further investigated the satisfaction levels with the quality of healthcare of individuals with private insurance, state provided insurance and those without insurance. The results reported by participants in this study suggest that individuals with higher incomes have higher levels of satisfaction with the quality of healthcare they receive than that of those with lower incomes.

Toward a Possible Social-Epistemic Creative Writing Pedagogy

Matthew Greene

Justin Young, English

I would like to present my paper “Toward a Possible Social-Epistemic Creative Writing Pedagogy.” Using James Berlin’s categorization of composition pedagogy into “cognitivist,” “expressivist,” and “social epistemic” rhetorics as a

framework, I researched various creative writing pedagogies with an eye towards moving to towards away from the passivity of the dominant mode creative writing instruction (what Wallace Stegner refers to as teaching-as-counterpunching) and in the direction of a pedagogical approach with greater heed given to social and materials conditions of the authors and text. Pivoting off of the research of Shirley Geok-lin Lim and then folding in a bit of Graham Harman's object-oriented ontology as rendered into pedagogical terms by Sevket Benhur Oral, I then suggest possible practical, holisitic applications that might be used in a creative writing classroom environment.

Vision Guided Robotics Using Light Filters

William Groves, Chase Walter, Derek Weston

Donald Richterj, Engineering

Using vision guided robotics can simplify the process of picking parts that have not been organized. A limitation of the vision system is the cameras used are monochrome and therefore cannot differentiate colors when identifying parts. Proper lighting allows the monochrome camera of the robot vision system to increase the contrast of certain features of an object. The goal of our undergraduate research project is to differentiate between colors that appear to be the same to the vision camera. The way we achieved this is by increasing the contrast between colors by using a band pass light filters that selectively passes certain wavelengths of light. Using colored gel light filters will make certain colors appear lighter in contrast to the camera and darken the rest, which increases the relative contrast between the filtered color and the target color. The vision software was programmed to find only three letters, "E", "W", and "U". Each of these letters was in four colors, black, blue, red, and yellow. Red and blue light filters were used to manipulate the contrast between the letters. The use of light filters allowed us to find and place twelve distinct parts with 100% accuracy using only the three taught parts.

Do Biotic or Abiotic Factors Influence Long-Term Dynamics of the Invasive Grass, *Ventenata Dubia*, in a Semi-Arid Ecosystem?

Rachael Hamby

Rebecca Brown, Biology

Invasive winter annual grasses (IWAGs) germinate in the fall and exploit spring soil moisture, replacing native species. The well-known IWAG, *Bromus Tectorum* (cheatgrass), is limited by biological soil crust (biocrust) in arid ecosystems. However, it is not known how biocrust affects other IWAG species in semiarid environments. Recently, the less-studied IWAG, *Ventenata Dubia*, has spread throughout the Inland Northwest, causing detrimental impacts. Observations suggest that *V. Dubia* persists in biocrust dominated areas with shallow, seasonally water-inundated soils. Our objective was to determine whether *V. Dubia* is affected more by biotic interactions with biocrust, or by abiotic factors such as spring water depth. To test this, 7 ~25 m transects were established in 2012 with ~four 1 m² plots ranging from high to low *V. Dubia* abundance. In each plot, percent cover of moss, lichen and all vascular plants, and IWAG stem counts were recorded in 2012, 2013, 2015, and 2016. In spring 2016, standing water and saturated ground percent covers, and maximum water depth were recorded in all plots. The effects of spring moisture and biocrust characteristics on *V. Dubia* were analyzed using mixed effect models. While maximum water depth was positively associated with *V. Dubia* cover, biocrust abundance had no relationship. These results suggest that *V. Dubia* abundance is driven by spring moisture, rather than biocrust. Long-term monitoring of *V. dubia* and the climate factors that affect it will be necessary to understand the ecological factors driving this species.

Temporal Analysis For Runaways At Residential Youth Centers

Paisley Heckman, Samantha Swanson

Anna Tresidder, Health Services Administration

This study examines the occurrence of runaways in a residential youth center in the state of Washington. Research has shown that between 1.6 and 2.8 million youth runaway each year in the United States. Illustrating how and why some months spur greater incidents, allows group housing facilities to alter staffing or conduct better training resulting in minimal occurrences of runaway incidents. A de-identified data set from a local residential facility was used to examine the temporal occurrence of runaway incidents. The research team hypothesized that the strongest correlation would be in the spring and summer months, specifically in the months of May to August. The runaway incidents included in the research occurred between the years of 1998 and 2015, and of total reported incidents, 16.8 percent (n=6,665) of data entries were due to residents running away or attempting to run away. The results illustrate patterns of youth runaway incidents from residential facilities that could inform decision making of residential youth centers across the country. Preliminary analysis indicates the original hypothesis was partially supported. May had the highest spike in residential runaways however the summer months did not show the spike in incidents expected. Spring months showed the greatest correlation of runaway incidents for the residential youth center. Results indicate a combination of better training of current staff, and increased staff presence in the spring months will create an environment that discourages residential runaways and address underlying issues that stimulate runaway attempts.

The Language of Identification

Jason Heitzmann

Mimi Marinucci, Philosophy

An individual develops language by establishing relations to the world around them. This relationism is the foundation for the worldview of the individual. The first relations established are to those things nearest in proximity and as time goes on more complex associations stress the expressions which the individual uses to understand itself. the individual begins to associate certain words and phrases to themselves mirroring the interpretation of the use of those same terms by those nearest in proximity during this developmental stage. As more relations are established so too are new sets of words and phrases. Previously acquired relations are forced to develop and adapt to the confines of this new worldview. As time passes an individual is exposed to others who use language as a means to communicate and through this communication develop a new sense of relativity; this is the beginnings of a social identity. As this identity emerges the language used to describe both the identity itself as well as its relations morph and adapt to the language used by peers. However, the use of an individual's language in the social sphere continues to mirror the understanding of relations from the worldview of that individual and therefore does not accurately reflect the societal meanings of that language. If the individual self is not able to adapt its own interpretive worldview into its social sphere then it is merely putting on a mask when maneuvering within that social setting. The language that the individual uses reflect the level of integrity established between the words themselves and the relations they imply.

A Battle for Freedom: Where Does Negative Liberty End, and Positive Begin?

Corey Horn

Terrance MacMullan, Philosophy

One of the biggest questions in political theory is “how big should government be?” We see this battle hashed out by politicians on a daily basis on issues from health care, to welfare. The political left will advocate for large government, while the right will attempt to make government as small as possible. While most rhetoric around policy deals with the question “to what extent does government have control,” I believe there should be a radical tone shift towards the question “to what extent does the individual have control?” One of the more productive ways of answering this question was developed by Isaiah Berlin in his essay Two Concepts of Liberty where he makes a distinction between negative and

positive liberty. This tone shift would attempt to put control over governments function into the individual's hands by enriching their personal positive liberty, which in turn would be promoted through negative governmental liberty. Jean-Jacques Rousseau argues for this sort of harmony in his Social Contract; where the citizen has their liberty and the government regulates to a sizable extent. Immanuel Kant, a German philosopher who writes extensively on reason and personal growth, speaks about personal development with a reflexive attribute that is shown in society. In this paper, I will argue that negative liberty on the governmental level can create large positive personal liberty in its citizens. Further, if this system is set up in such a way that personal liberty is allowed through negative interference, then through democratic deliberations set forth by thinkers like Jürgen Habermas, the citizen's personal positive liberty will reflect in the government, creating a continual growth of maximum efficiency where social programs and values emerge naturally rather than artificially.

Material Properties of 3D Printed ABS

Konrad Hubbard

Heechang Bae, Engineering

3D Printing is becoming an exceedingly popular method for fabricating various components, both in industry as well as at the hobbyist level. While it is often used for decorative trinkets, it can also be used to create structural components. Due to the nature of 3D printing, the parts are built in layers. This causes a certain amount of structural uncertainty, as well as causing stress concentrations where each layer is added to the previous. This research explores the differences in yield and ultimate strength of a component, based on orientation of the printing. Tensile and Fatigue tests will be conducted to determine the desired mechanical properties. Additionally, the effect of surface treatments will be explored to determine whether the weak orientation strength can be increased through post production treatments. The overall goal of this research is to determine a safety factor that should be incorporated into design calculations, to account for the various possible stress orientations that a part may encounter.

Microsoft's Voice Recognition and Altered Waveforms

Robert Humphres

Dan Tappan, Addiction Studies

This project was about evaluating Microsoft's voice recognition software, which identifies words spoken into a microphone. It employed formal tools and techniques for modeling, simulation, visualization, and analysis to a practical real-world problem. The goal was to see how the software behaved as words were altered by increasing or decreasing the volume and/or speed. All tests were conducted 20 times within an automated framework under controlled conditions. Each generated statistics to help interpret the results. The software used a custom dictionary of words. Nine were chosen because of their similarity or difference in phonetics to see if the software would get confused by the alterations. Visual representations were created to show the differences between the original and altered words. They included 2D and 3D graphs and computer graphics. The results showed that the recognition of the original (unaltered) words was perfect: 20 out of 20. However, as soon as the words were altered, the results changed significantly for all the words.

Decolorization of Dye in Aqueous Solution Using Glass Raschig Rings Coated with TiO₂

Ryota Kato

Hiroharu Kawanaka, Chemistry & Biochemistry

Titanium dioxide(TiO₂) is a common semiconductor photocatalyst used in various fields. Although TiO₂ is commonly applied in purification processes, it has mostly been studied in particle or powder forms. Therefore, it is difficult to use for flow processes. But, here it can be easily recovered and applied in the continuous processes by loading TiO₂ on a support. In this study, we used glass Raschig rings as a support. Glass Raschig rings have high surface area and transparency. Glass Raschig rings were coated with TiO₂, namely Evonik P25, and the performance was tested on the degradation of

Reactive Yellow 86 (RY86) using UV light irradiation. RY86 is an azo dye, and which is carcinogenic because it contains aromatic amines. The efficiency of decolorization and degradation was investigated using UV-vis spectrometry(418 nm) and Total Organic Carbon(TOC) analyzer. Little degradation was observed after UV irradiation for 60 min, but RY86 was almost completely decolorized. RY86 was mostly degraded after UV irradiation for 12 h. It shows that RY86 may completely be degraded by UV irradiation for longer time. For the degradation of RY86, the azo group was broken, and then -SO₃Na and -Cl were degraded and SO₄²⁻ and Cl⁻ were generated. Finally, its aromatic rings and other hydrocarbon were degraded to CO₂ and H₂O. Thus, RY86 was degraded to various inorganic molecules and completely mineralized. This result can apply to the remediation of pollution by using the azo dyes and potentially improve environmental issues in the world.

Diversity of Fungal Needle Endophytes Of *Pinus Ponderosa*

Jaimie Kenney

Suzanne Schwab, Biology

Foliar fungal endophytes are fungi that live part of their life cycles within plant leaf tissues, without causing obvious negative effects to the plant. Endophytic fungi span the spectrum from latent pathogens to mutualists, and may alter plant resistance to biotic and abiotic stressors. Most previous research has been on endophytes of crops rather than native plant species. *Pinus ponderosa* is the most widespread pine species in North America, but little is known about the composition of its fungal foliar endophyte community. Our objective was to determine the diversity of *P. ponderosa* fungal endophyte communities between different trees, between branches within a tree, and between needles of different ages. We selected three trees from a single location, five branches from each tree, and collected needles from 2015 and 2016 from each branch. Needles were surface sterilized and plated on culture media. After emergence, endophytes were distinguished by microscopy into distinct morphotypes. Mean number of fungal morphotypes per needle age was analyzed using a T-test. The frequency of each morphotype between branches within a tree and between trees was compared using a chi-squared test.

Empowering English Language Learners in Composition Courses

Renee Kenney

Tracey McHenry, English

In my research on student voice in English composition courses, I examined whether or not this applies to an English Language Learner (ELL) and, depending on the results, what the pedagogical implications would be. A student's voice or authentic expression of their self in writing is an important concept in composition as the field has shifted towards a more student-centered, socially constructed focus. My interest, then, is whether or not this self-expression applies to an ELL in an English composition course and if such students can fully express themselves under the lens of a second or third language. To determine if an answer exists, I will consult both composition and Teaching English to Speakers of Other Languages (TESOL) theories and explore the relationships among them.

Contrasting Cultural Approaches to Critical Thinking, Voice, and Plagiarism

Charis Ketcham

Tracey McHenry, English

I will examine the significance and interaction of cultural and rhetorical values in academic English composition courses. My research began as an attempt to answer the question, "What should American English instructors be aware of regarding differing cultural composition values, and what actions might they take to help an L2 student (second language learner) learn American composition values, while preserving as much student identity as possible?" This question was derived from an analysis of Ilona Leki's article "Meaning and Development of Academic Literacy in a Second Language". In her article, Leki discusses three rhetorical values that often differ across cultures: critical thinking, authentic voice, and plagiarism. After I read Leki's article, I examined what other authors in the field of TESOL have

researched and written regarding these same rhetorical challenges. Students may have differing rhetorical values that inform their concepts of critical thinking, authentic voice, and plagiarism. I argue that instructors need to become aware of these differing rhetorical values and how to navigate discussions about these topics with students. In my presentation, I will propose a few culturally sensitive ways to approach the topics of critical thinking, authentic voice, and plagiarism with L2 learners in English composition classes.

Betty Crocker and Rosie the Riveter: The Changing Roles Of American Women Entering The Workforce During World War II

Kelli Knerr

Ann Le Bar, History

Before WWII, women primarily worked inside the home. With the institution of the draft, women's roles had a dramatic and lasting change. They entered the workforce, en masse, for many different reasons including patriotic duty, economic growth, or simply to prove something. This paper will explore how Betty Crocker and Rosie the Riveter, the icons which are deceptively different in appearance and message, both influenced American women entering the workforce while still maintaining traditional societal roles. Through personal letters and stories, along with government documents, this paper will look at the similarities and differences between the messages of Betty Crocker and Rosie the Riveter and how both "women" changed gender roles in America for the duration.

United States of America Conceiving the Natural World and Law Of the Declaration of Independence and How the Indigenous People Shaped its Creation

Alfred Michael La Pier

Terrance MacMullan, Philosophy

This paper explores how the thought of Indigenous People influenced The Declaration of Independence and other founding documents of the United States of America. Where many researchers argue that the US government was based off the model of the Roman Republic, my research has found many contributions made by indigenous people of the United States of America. In particular, the indigenous tribe that most contributed to the creation of the Declaration of Independence was the Haudenosaunee or better known as the Iroquois nation. This research challenges the common view of how the United States came about. Even so if we can remain rational and unbiased from our perspectives we can relieve ourselves of this euro-centrism that overshadows the actual narrative that brought about the United States. Understanding this aspect of how the United States came about would not only allow citizens, but everyone who lives in the Americas to better understand the history of where the United States came from. But as Russel means once said, a country that knows not its past, has no ability in realizing its future.

Between Two Worlds: Pearl S. Buck and Barbara Mitchell

Nichole La Torre

LaVona Reeves, English

This research paper seeks to analyze Barbara Mitchell's "Between Two Worlds: A Story about Pearl S. Buck", and explore its major themes. Several biographies about Pearl S. Buck have been written, but Mitchell's account includes a number of interesting omissions. Despite or perhaps due to its brevity and the exclusion of issues detailed in other biographies, this book may be useful for class discussions about how the presence or absence of people and events affects the retelling of others' life stories. This analysis aims to investigate how representations of gender, voice, word choice, and omissions can reveal the purpose of writing, exigence, or biases of the author.

Are Plant Soil Feedbacks in Semi-Arid Grasslands Altered by the Invasive Winter Annual Grass, *Ventenata Dubia*?

Jared Lamm

Justin Bastow, Biology

Ventenata Dubia is an invasive grass of semi-arid regions that decreases biodiversity. It may be impacted by plant-soil feedbacks, which are changes in soil biotic or abiotic components, due to plant-soil interactions, that can impact future plant fitness. My goal was to determine the effect *V. Dubia* has on plant-soil feedbacks with native and non-native species. To address this, I grew native and non-native grasses (*Poa Secunda* and *V. Dubia*, respectively) in 4 soil types (invaded, non-invaded, sterile invaded, and sterile non-invaded) using a fully factorial experiment with 10 replicates. Roots and shoots were weighed and soil was collected for nematode amounts/composition and nutrient/elemental analysis. The effect of soil type on growth of grass species was analyzed using general linear models. *V. Dubia* invaded soils significantly reduced the fitness of both the non-native *V. Dubia* and native *P. secunda* grasses. *V. Dubia* showed a significant positive response to soil sterilization while the native grass only benefited marginally. These results suggest soil pathogens that negatively impact plant fitness accumulate in the soil during a *V. Dubia* invasion. *V. Dubia* may also benefit more than native plants from soil-sterilizing events, like intense fire. This has important implications for managing *V. Dubia*.

Humanoid Robot Simulation: NASA Space Robotics Challenge

Jennifer Leaf

Donald Richterj, Engineering

In 2016, NASA announced the Space Robotics Challenge, a competition to control the Valkyrie humanoid robot via a computer simulation to accomplish various tasks to support space missions. The first phase of the competition was free to enter, and was open to any individual or team wishing to participate. I chose to participate in this competition as a “team of one” as a means of learning about robot simulation software and common robotic algorithms such as computer vision and robot movement. This presentation summarizes both the work that I completed, and the concepts that I had to learn in order to complete this project.

Industrial Cupcaker 3000

Jennifer Leaf

Robert Gerlick, Engineering

The Industrial Cupcaker 3000 is a complete industrial robotic work cell that cooks and decorates miniature cupcakes. The work cell includes 3 separate systems – an Adept S600 robotic arm, an Arduino driven CNC table built specifically for this project to decorate the cupcakes to order, and a BeagleBone Black that drives a touchscreen vending interface and handles communication between the other systems. The work cell was designed and implemented in the span of 5 weeks, delivering freshly cooked cupcakes using an off-the-shelf cupcake cooker, and frosted on demand using the CNC table.

3D Bin Picking and Placing of Ping Pong Balls Using Robotic Vision and Depth Data

Jennifer Leaf

Donald Richterj, Engineering

Part picking and placing is a common operation for manufacturing automation. When automating existing processes, it may be desirable to handle parts that are presented to the robot in an unstructured environment, rather than altering the environment to present parts in a structured manner. For parts that may be in different orientations or overlap with other parts, a 3D vision system can be used to assist the robot in accurately identifying the part and grasping it at an appropriate point on the part. To perform 3D bin picking, at least two cameras or sources of 2D data must be provided in order to calculate the part location in 3D. This project explores the use of a manufactured supplied 2D camera, in conjunction with

the depth data stream from a commercial Microsoft Kinect sensor, to locate objects in 3D space in the work envelope of an industrial robot. We present a process for mapping the 2D camera coordinates to the Kinect depth data, and modifying the offset used by the robot to pick up a part in a semi-structured environment using a vacuum gripper. The goal is to extend this approach to picking parts with more complex shapes, and a fully unstructured environment.

Remote Interaction with a NAO Robot Using a Tablet Device

Jennifer Leaf

Robert Gerlick, Engineering

The NAO humanoid robot includes several programming tools and development kits that are supported on commonly available operating systems for defining the behavior of the robot at runtime. However, there are situations where it is desirable to control the NAO, or to run specific programs, from tablets or other devices that are not supported by the vendor-provided tools. To support a research project for improving the usability of the NAO by therapists treating autism spectrum disorder (ASD) in children, we developed a method of using the WebSocket protocol to send commands from an app running on a tablet device to a NAO robot. A proof-of-concept architecture and implementation using an Android tablet app is presented. Finally, the alternative technologies and potential next steps for future enhancement are discussed.

Quantifying Clinical Instructor Mentorship and Community Benefit in the Doctorate of Physical Therapy Curriculum

Emilie Lehman

Joe Palmer, Physical Therapy

Clinical internships are a fundamental aspect of physical therapy education, facilitating the transition between didactic education and clinical practice under the mentorship of clinicians. There is a strong foundation of research on educational strategies of expert instructors and the productivity cost of clinical internships. However, there has been little investigation into the burden of time spent mentoring students outside of billable “productive” time. In many organizations, this loss of time is captured as “community benefit” in that therapists are volunteering their time to educate the next generation of physical therapy (PT) practitioners. Our research seeks to quantify this benefit of clinical instruction by identifying the amount of time instructors spend on student mentorship outside of direct patient care. The first step in this process is crafting a research tool that accurately captures the data without being overly burdensome to the study participants. In this pilot study clinical instructors in a variety of PT practice settings were selected to participate in a multi-week trial to evaluate the efficacy and efficiency of the research tool prior to launching a larger study scheduled for the Fall of 2017. An accurate understanding of time spent on mentorship will allow for therapists and organizations to better understand the economic impact to the host training site. Furthermore, this research will open the door for realistic conversations to occur between academic institutions and clinical sites regarding numbers of students accepted and potential changes in training and mentorship strategies.

Applying Plato & Baudrillard to English Education in Japan

Kevin Lemberger

LaVona Reeves, English

It has been argued that English education in Japan is not based on the living language but on a simulation--akin to Plato's cave in which those watching a play see only shadows: "True, how could they see anything but the shadows if they were never allowed to move their heads?" In Japan, the government has asked teachers to introduce communicative activities and focus on the living language, but teachers are unable to do that due to their own training in Grammar-Translation, not in Communicative Language Teaching (CLT). Without exposure to the living language and training in CLT, it is impossible for teachers to implement mandated changes--they remain stuck in Plato's cave seeing only the shadows of

English or what Baudrillard calls a "simulation" of the real language. Having taught English in Japan, I apply Plato & Baudrillard to this case and recommend ways to introduce CLT beyond the elementary school.

A Lack of Social Media and Its Effect on Technological Development, Reception, and Use **Meg Lybbert**

Travis Masingale, Design

This project demonstrates how an absence of social media during the early and mid-twentieth century affected the development, use, and reception of the computer and the Internet. Much has been written about the development of the computer and the Internet, as well as human-computer interaction and the differences between mass and social media. However, little research has been done regarding the relationship between all three topics. The contribution made by this research would serve to explain how closely the three topics are intertwined and provide a better understanding of current and historical relationships between people and digital tools used to connect with others. Research was conducted through investigations of the scholarly journal database as well as printed materials and historical accounts. The conclusions of this research indicate that a lack of social media created an environment in which individuals and developers worked with one another in close proximity to build the first computers and the beginnings of the Internet. Recognizing the importance of collaboration and social interaction, those individuals adapted the use of networked machines to work together at the same time in different places. Those individuals began to experiment with the way that humans and computers would interact. However, the general public took significantly more time to adapt computers for socializing, originally using the computers and Internet more frequently as an office tool or as a way of accessing the mass media. User interfaces used by the general public reflect and affected the ways the general public used technology.

Go Ask Your Father: Comparing Scholarly Discourses on Motherhood and Related Issues Across Five Western Industrial Societies

Tiffany Magazzeni

Peter Shields, Communication Studies

The purpose of this review of literature is to highlight the difference in current academic research completed in five western countries regarding the various issues related to motherhood. Scholarly literature and professional discourse was provided in the United States, Norway, Australia, Canada, and the United Kingdom and was reviewed with respect to motherhood and feminism, work-life balance, stereotypes of feminists, the issues of Intensive Mothering, the myth of the Superwomen, and domestic division of labor. Although researchers in these countries address these issues in their own way, there appears to be a difference in how the US based research focuses its lens on these subjects. While research performed in Norway, Australia, Canada, and the United Kingdom see these issues as affecting all people, research produced in the US is substantially more individually focused, framing these issues as affecting only the mother. The purpose of this literature review, then, is not only to highlight the contributions of relevant research within these countries, but also to draw a comparison between research on motherhood issues conducted in the US versus research conducted in four other western industrialized countries.

Research in Identity and Video Games

Olivia Manusia

Julia Smith, Anthropology

This research explores how socially marginalized identities, including gender identity, sexuality, race, and ethnicity, affect the way players interact with and think about single player role-playing games. Most research about player identity and their experience with video games has focused on interaction between human players in Massively-Multiplayer Online Role-Playing Games. There is little research done about these issues in single-player role-playing games; this study aims to help close that gap. This project focuses on how a player's social identity and life experiences shape their experiences

of the stories and themes in video games. This research builds on an exploratory project I did which suggested that an individual's social identity has an effect on how players think about choices and non-player characters in Fallout 4. That project suggested that players who have marginalized identities are more affected by themes of discrimination and injustice in the game. This study uses semi-structured interviews, both in person and over Skype with players to explore dialogues and discourses about these issues in relation to the Dragon Age series, and the Mass Effect series. Players are affected by the ways they see themselves and themes that are present in these games. I've found that people who have marginalized identities are tuned-in to different circumstances in the game world than people who do not share those identities. They perceive themes in the games to address issues they face in their everyday lives.

Qualitative Study: Inter-Generational Domestic Violence

Ella McCalidaine

Todd Hechtman, Sociology & Justice Studies

Intimate Partner Violence has generated a vast quantity of research over the last several decades, resulting in an occasionally-conflicting array of findings. This article attempts to contribute to the existing literature by offering a case-study involving three generations of women within the same family line, who have experienced some form of intimate partner violence, child abuse, or both. This research is framed by institutional ethnography to justify the methodology, and includes ethnography and auto-ethnography of participants to draw from strong objectivity. Analysis is conducted utilizing feminist standpoint theory, so that insight is oriented from lived experiences rather than abstract, calculated analysis. Johnson's typology of domestic violence is utilized to distinguish the specific instances discussed across generations, and patterns of violence including negotiation of acceptable norms and transmission from parent to child are explored. Themes uncovered lead to the proposal of a concept referred to as the Gaze of Morality, which describes the pressure felt by both the enactor and receiver of intimate partner violence to deny or obscure the reality to conform to social expectations of behavior. Enactors of violence hide their behavior to avoid moral condemnation of engaging in patriarchal violence beyond acceptable levels of plausible deniability. Receivers of violence may negotiate levels of it to provide for their children when they perceive no other recourse, rather than risk condemnation from the gaze of morality for not selflessly providing for their children, regardless of the personal cost.

Best Practices for Undocumented Students in Institutions of Higher Education: A

Qualitative Study

Edith Melendez

Shanna Davis, Psychology

Research studies show that 65,000 undocumented students graduate from high schools in the U.S. yearly. As defined by the National Immigration Law Center, an undocumented person is a foreign national who resides in the United States with fraudulent documents or entered without authorization. Every year hundreds of motivated students with high potential to succeed in an academic setting enroll into four-year university with hopes of becoming upwardly mobile and contributors to society. Compared to college students with authorization, they have added stress and pressures relating to overcoming financial, social, and educational challenges. Despite their obstacles and legal status, they persevere and achieve academic success along educational pipelines. However, many universities in Washington State lack support structures that provide social support, personal development, and academic services specifically tailored to college students without documentation, creating gaps in assisting undocumented students to prosper in the academy. To expand the understanding of how to better serve undocumented students, qualitative data was collected in the form of anonymous online surveys. Eleven participants identified themselves as an undocumented student enrolled at a regional university and participated in the K-12 public education for at least 5 years. Findings showed that the majority of undocumented students were dissatisfied with the academic support they have received, and that implementing a physical space or center with tailored services could improve their educational experience.

Equity Pedagogy to Produce Citizens Ready to Participate in a Multicultural, Inclusive World

Amanda Mell

Norma Cardenas, Chicano Studies

In a time when educators are becoming aware of the needs of diverse students, fostering inclusivity and equity can become a trendy idea. Candidates make it through teacher preparation programs requiring as little as one diversity course to graduate and experienced teachers often never get additional coursework. Diversity consultant Verna Myers voiced, “Diversity is being invited to the party; inclusion is being asked to dance”. Attending a training, receiving a certificate, and placing an ally sticker outside of a classroom door is not enough and educators should be held accountable to continue their own learning to meet the needs of culturally and linguistically diverse students. Student identity development, self-esteem, attitudes towards various groups in society, and attitudes toward learning are directly impacted by the level of equity pedagogy a teacher demonstrates in the classroom. Using Critical Race Theory, Chicana Feminist Theory, Critical Race Feminista Praxis, and James A. Banks’ five dimensions of multiculturalism, I will explore practical strategies to build a truly inclusive classroom and ways to enhance curricula to produce generations of citizens who are ready to participate in a multicultural, inclusive world.

Cross-Cultural Placemaking in Latino Central Washington

Jennyfer Mesa

Dick Winchell, Urban & Regional Planning

Since the 1940s Washington State has been successful in recruiting Latino migrants to work in agricultural activities, as well as the manufacturing, service, and food processing sectors of Central Washington. Currently the area is home to first, second, and now third generation Latinos, and Hispanics have been the majority population of over twenty cities and small towns, and are the majority population in two counties in 2010. Although groups of Latinos physically reside in the communities of contemporary Central Washington, and have done so in some cases for generations, it may be argued that they have had minimal impact and left differing impressions on the cultural landscapes of the region. Using various research tools including census data, fieldwork observation, government record analysis, and face-to-face interviews with business owners, seasonal migrants, and local residents, this study will examine issues of Latino placemaking in two small towns; Othello and Sunnyside. These towns demonstrate contrasting patterns of how Latino population growth, culture, identity, and sense of place has evolved and impacted the built environments, physical landscapes, and governing bodies of the communities. These two towns represent very different and distinctive patterns of Latino placemaking in a region that has historically not embraced diversity.

Investigating the Effectiveness of Text Messaging Intervention in Healthcare

Leah Mohtes-Chan

Dan Anton, Physical Therapy

Text messaging (short-message, SMS) has become ubiquitous in modern society. Recent studies have investigated text messaging’s use in various healthcare interventions. SMS interventions have been shown to be effective in promoting medication adherence, smoking cessation, physical activity, weight loss, and safer sex. The Safety Voice for Ergonomics (SAVE) program incorporated the use of text-message as a secondary training device after receiving primary training that incorporated ergonomic education and safety problem-solving skills (“safety voice”) into brick and block masons’ apprenticeship training. Apprentices were sent weekly knowledge refresher text messages, that reinforced the primary SAVE training. The mean response rate was 54%, accuracy rate of correct responses was 82%, and behavior rate was 58%. The high response rate suggests that SMS may effectively provide secondary ergonomics and safety voice refresher training. This high responsiveness suggests text messaging has the potential to be an effective communication medium. As healthcare progresses, text messaging technology has the potential to assist rehabilitation specialists—including

speech, occupational, and physical therapists—in sending appointment and home exercise reminders, reinforcing therapy intervention concepts, and promoting safe strategies to patients so that they can live as independently as possible.

Vegetation Community Development of Post-Dam Removal Reservoirs on the Elwha River, Washington

Olivia Morgan

Rebecca Brown, Biology

Dam removals in the United States are rare, and only 5% have been associated with an ecological study, so the ability of dam removal to restore pre-dam ecosystems is unknown. The 2012-2014 removal of two dams on the Elwha River (Washington) is the world's largest dam removal to date. My objectives are 1) to continue a long-term study of reservoir vegetation community development and 2) to expand this study to include active restoration areas which were seeded or planted with native plants by the National Park Service (NPS). I predict that the NPS plantings will increase species richness (SR). In 2016, I resampled permanent plots in the reservoirs to describe changes in the vegetation community and determine how that community is shaped by environmental factors such as landform and soil composition. Since 2013, native SR has declined on valley walls ($p=0.005$) and terraces ($p=0.002$) of Aldwell Reservoir (downstream); while cover by nonnative species increased significantly on these landforms. The concurrent decline in SR and increase in cover suggests that the plant community is developing into a later successional stage. Incorporating the NPS restoration plantings into planned monitoring will address the long-term effect of active restoration on plant communities.

Cultivation of Critical Thinking through Philosophical Dialogue

Aiko Nagabuchi

LaVona Reeves, English

Cultivation of critical thinking in students has been rigorously discussed and emphasized in mainstream education today. For instance, Matthew Lipman (1985, 2003), a catalyst for educational reform in the 1980s, disseminated the importance of philosophical dialogue. It is an inquiry-based approach that practices a persistent act of thinking to cultivate thoughts through questioning and exploring meanings and hidden assumptions. Students discuss diverse topics that have no absolute answers or solutions. Even though critical thinking is one of the 21st century learning skills that is vital to succeed in the global environment, such educational reform has yet to pervade especially ESL classrooms. This delay of critical thinking movement in English language teaching (ELT) could be due to the influential idea brought by the applied linguists, such as Atkinson (1995; 1997), Ramanathan (1997;1996) and Kaplan (1996). They claim that critical thinking is too difficult for non-native English speakers to fully understand the concept since it is a skill, gained unconsciously through a social practice. To investigate the idea of critical thinking in relation to ESL, the researcher (presenter) has conducted a case study in her ESL composition course to examine the validity of the view by applying the method of philosophical dialogue. In this session, the presenter will first introduce a brief history of critical thinking, its influence on the mainstream education and ELT. Then, she will present her research method and the results. At the end of the session, time for questions and answers will be held.

Examining Differences in Coping Strategies of Men and Women Considering Race, Religious Affiliation, and Sexual Orientation

Sam Nemri, Kaelyn Baker

Dr. Kayleen Islam-Zwart, Psychology

It has been well established that coping strategies vary widely between men and women (Guszkowska, 2016). Current empirical research shows that men are less likely to seek help for stressful life events and prefer task-oriented coping strategies, while women prefer to look for support and place more importance on venting of emotions (Guszkowska, 2016; Addis & Mahalik, 2003). We aim to shed light on coping strategies and how they differ between men and women, Oral Presentations ~ 71 ~

spanning race, religious affiliation, and sexual orientation. The study we are currently conducting includes about 280 participants who were obtained through the use of Eastern Washington University's SONA Research program, where undergraduate students volunteer to participate in exchange for research credit. Measures completed by each participant included a number of different scales; our focus is on is the COPE. The COPE is a questionnaire for measuring coping. It includes 60 statements comprising of 15 coping strategies (Guszkowska, 2016). We hypothesize that men will internalize their emotions, be less expressive, and be less likely to seek help, whereas women will externalize or express their emotions and be more likely to seek out help through outlets, whether through social connection or professional aid. We further hypothesize that men and women will exhibit different coping strategies as a function of their race (Blackmon, Coyle, Davenport, Owens, & Sparrow, 2016), religion (Hvidtjørn, Hjelmberg, Skytthe, Christensen, & Hvidt, 2014), and sexual orientation (Green & Feinstein, 2012).

Can Pokémon Go Motivate People to Walk More

Rachael Nevin

Sarah Mount, Physical Education, Health & Recreation

The Centers for Disease Control (CDC) estimates that two thirds of Americans are overweight or obese. There are many things that contribute to obesity, one of which is a sedentary lifestyle. According to the American Heart Association, most Americans only walk 2,000 of the 10,000 steps recommended for a healthy heart. Pokémon Go was designed by Niantic to encourage people to walk more and explore their urban environment. The purpose of this study is to determine if playing Pokémon Go results in people walking more steps. If it can be shown that games like Pokémon Go can extrinsically motivate people to walk, then perhaps the healthcare industry could team up with the video game industry to help design more effective games and apps that can help improve the health of sedentary people. The participants (n=12) were recruited from a mid-size university in the Northwestern United States. Participant steps will be tracked using a pedometer for four weeks. The first two weeks will establish a baseline to determine the average number of steps participants take on a daily and weekly basis. The last two weeks of the study will track participant steps while using the Pokémon Go app. A one-sample t-test will be used to analyze whether or not there was a significant difference in participant steps between the two sessions.

Evaluation of the Utility of the American College Health Association's National College Health Assessment II survey for Identification of Health Behaviors Associated with Academic Performance

David Nguyen

Krisztian Magori, Biology

The current study evaluates the validity of using the National College Health Assessment II (NCHA II), a commonly administered college health survey, that the administering company claims is useful for identification of common health and behavior risks relevant to academic performance. In this study, we used NCHA II data collected from a public university at four intervals between 2010 and 2016. Two methods were used in the analysis; multiple χ^2 -tests and boosted classification trees (BCT). The rank ordered lists generated by secondary analysis were compared with the results presented in the NCHA summary report provided by surveyors to universities. We found that student health factors identified by the NCHA II summary report as commonly effecting student academic outcomes were not consistent with our secondary analyses. The summary report ranked student stress and anxiety as the top health factors impacting academic performance. Both χ^2 and BCT secondary analyses found that association between these factors and student performance are not statistically significant. College health services should be aware of the limitations of NCHA II summary report and that secondary analysis of the data is necessary for accurate inferences about student health and academic performance.

Forced Sterilization in Australia and the Question of Human Rights

Tabitha Ormaechea

Vandana Asthana, International Affairs

Forced Sterilization is and historically has been a political tool used as a means of regulating the growth of the "undesirable" populace in an effort to improve their race. The global eugenics movement of the early twentieth century was heavily influenced by the ideology of Australia. Through the years those who have been targeted have varied based on the interests of the Australian government. The paper analyzes the historical framework of this practice and how this practice has evolved into a globally contentious human rights issue. Forced sterilization is a practice that has been condemned by nearly all developed nations, NGOs and the UN yet Australia continues the usage of this practice. These various political actors cite this practice as a blatant human rights violation and have taken many steps to stop the use of forced sterilization. In this paper I present the exploration of the differing philosophies of the continued use of this controversial political practice.

Geochemical Analysis of Spokane Urban Neighborhood Soils

Eric Perry

Carmen Nezat, Geology

Soil samples in urban neighborhoods, primarily Spokane's South Hill, were analyzed for the presence of heavy metals. The soils were leached to mimic long term environmental conditions using dilute nitric acid (NO₃). The leachates were analyzed for heavy metals (e.g., arsenic, lead, and zinc) using an Inductively Coupled Plasma-Optical Emission Spectrometer (ICP-OES). While most soils had metal concentrations that fell below any hazardous levels, some locations did have elevated lead concentrations, with one near the WADOE cleanup level for unrestricted land use. Considering this part of Spokane is absent of any heavy industrial or mining activity, possible sources are lead-based paint, air deposition of formerly used leaded gasoline, and certain chemical fertilizers. To determine the likely contaminant source, the chemical composition of the soils was then compared to an analysis of known lead based paint. Soils that had elevated lead levels also had high concentrations of zinc, which is consistent with the sampled lead based paint. The data is also of practical information because there are many children who live in these upper to middle-class homes who may play in and around these soils, and therefore this information can be used to educate local families about soil safety.

Different Lives Different Standards: The Impact of Culture on English Language Learners

Shawn Peterson

Beth Torgerson, English

The purpose of this informative research paper and presentation is to educate future teachers and other interested parties on the impact that culture can have on the writing of English Language Learner (ELL) students when compared to their English-speaking counterparts. Three specific topics relate to how the native culture of ELL students can impact their ability to write in the English language. These three topics are: 1. The impact of rhetorical differences in writing between native English writers and ELL students, 2. Differing levels of knowledge and views on the concept of plagiarism within academic writing, and 3. The ability of ELL students to access knowledge and experiences from their own culture called "fonts of knowledge." (Hall and Axelrod). Research on these topics from Dr. Jack Jinghui Liu as well as work by Lei Jun, Hu Guangwei, Anna Hall Yasacca Axelrod, and Joel E. Dwordin was used to help demonstrate the various effects that an ELL student's culture can have when learning to write in the English language.

Wine Women and Song: Mythic Evidence for the Favor of Women by Dionysus

Mica Pointer

Georgia Bazemore, History

The topic of this presentation is about the favor Dionysos carries towards women and the threat he presents to male authority as is evident from mythological sources that depict Dionysos as a patron and vindicator of women, and punisher of men. The sources that will be utilized include mythological writings such as the Homeric Hymns, the Orphic Hymns, Hesiod's 'Theogony', Apollodorus's 'Library of Greek Mythology', Euripides' 'The Bacchae', Ovid's 'Metamorphoses', and Plutarch's 'Life of Theseus'. This presentation is organized topically based on the different myths and themes within those myths that illustrate the points outlined above.

Shakespeare's Globe Theater: A Chimera of Dramatic Architecture

Mica Pointer

Christopher Kirby, Philosophy

What makes the Globe Theater unique in the spectrum of dramatic architecture is not just its association with Shakespeare and his timeless plays, but that it is a collage of all the best elements of theater architecture until that time. This unique combination of elements, taken from ancient Greek and Roman theaters revived by the Italian Renaissance, and Medieval performance spaces typical of Northern Europe, both influenced and were influenced by the society that built, performed, and patronized the theater at that time. From this, the Globe Theater not only becomes a unique moment in the history of theatrical architecture, but a snapshot of values held by Elizabethan society at that time.

The Rhetorical Analysis of Permanent Body Art

Raquel Ramos

LaVona Reeves, English

The practice of tattooing has been around since the prehistoric era and was practiced by many civilizations for different purposes or reasons. Tattooing is defined as "deliberate or accidental depositing of pigment in the skin," (Oanta, et. al. 1). Tattoos are a form of art that individuals may seek to permanently have on their body to make a powerful statement, to have a loving reminder, etc. The rhetoric behind tattoos varies from person to person. Some are imprinted with tattoos against their will (e.g. holocaust survivors, slaves). But even so, tattoos can be used as a form of empowerment. Looking at tattoos through the theory of marginalization and rhetoric as a form resistance, one can learn about the idea of persuading the audience to transform the "box" one is often put into, and realize that as unique individuals in society, we need to embrace our diverse identities. As Sergeant Jennings states, "most modern tattoos are received not just as an expression of individualism but also as a way to tell a story of a significant event in one's life. They often serve as solemn reminders of troubled pasts and a way forward," (D4).

Childhood Experiences: Their Impact on Empathy and Optimism

Samantha Randall

Kerryn Bell, Sociology & Justice Studies

Due to the psychological, physical, and emotional trauma children may experience while their parents are abusing drugs and/or alcohol, the traits empathy and optimism are potentially susceptible to various effects resulting from the abnormal family environment. These effects can last through adulthood and have an impact on life decisions, personal well-being and interpersonal relationships as well as the ways in which a person conducts themselves in society. This study aimed to find a correlation between exposure to drugs and alcohol in childhood and its impact on those various aspects of life in adulthood. Research was conducted using measurable tests for empathy, optimism, organic questions, and basic demographic questions. The study was available to students at Eastern Washington University through the anonymous survey program Qualtrics. My hypotheses for this study were (1) participants exposed to drugs and alcoholism during

childhood will have lower levels of optimism and empathy than participants who were unexposed to substances and (2) there will be a difference between drugs and alcohol. My findings suggest that participants who were exposed to both drugs and alcohol were more likely to be low in empathy and optimism, as well as a less positive view of their childhoods.

A Dramatistic Analysis of Sandy Hook Promise's Evan

Daniel Roemer

Patricia Chantrill, Communication Studies

This research will serve as an analysis of BBDO's and Sandy Hook Promise's Evan, a powerful PSA that examines the consequences of inaction in a society and attempts to assess what measures individuals belonging to a nurturing society should take in response to devastating events with traumatic ripple effects that can endure for generations. The shooting at Sandy Hook Elementary forever altered the lives of many families. It is important that as a society in flux, we learn to respond appropriately to these forms of tragedy. The analysis of Evan will first take place through the lens of close textual analysis. The reason why it is crucial to examine this PSA from a close textual analysis perspective is that it is multi-layered and there is a great deal going on in this PSA. It is first framed as a story of high school love and the desire two individuals have to make a connection. What soon becomes apparent though in this PSA is how simple it can be for individuals to become distracted from events and discourse that are truly life altering, and have the power to impact an entire society. While the narrative regarding high school love that is initially on display here is charming, life-affirming and simple in the perfect measure, it is truly staggering the way these warm feelings can distract the audience from the way sinister events can unfold at the drop of a dime. Life can change in profound and devastating ways in a matter of minutes and this is something that this two minute and thirty second PSA captures better than most films. The reason why Burke's dramatism is also crucial to this study is because the framing of this story as a drama helps illuminate the purpose of misleading an audience in an attempt to draw attention to something grander in scope.

A Fish Outta Water: A Cross-Cultural Perspective on International Student Development

Audel Rosas

Christina Torres-Garcia, Ronald McNair Program

Focusing on intellectual development over social development has become the dominant philosophy on addressing student development within the international student population. This dominant method on conducting research on international students has produced a means of research fixed upon the language barrier international students face while studying in the United States that only address the academic achievement of these students. Through a mixed-method study, this study examines what factors contribute to a positive sojourn experience for international students. This review indicates that a successful program needs to address both an intellectual element and social element of student development as they are intrinsically linked. Failing to address these variables impacts student experience in universities abroad. This paper presents the positive and negative ramifications of international student programs in how they address student development of international students.

The Catholic Church and Spousal Rape: Examining the Church's Stance on Spousal Rape in 1970's and 1980's

Hanncel Sanchez

Joseph Lenti, Women's & Gender Studies

During the 1970's and 1980's while the feminism and anti-rape movements were progressing in the U.S., the Catholic Church's stance on spousal rape within the Latino community was quite questionable. In fact, there was a palpable silence from the church regarding domestic violence altogether. This was a stirring factor since many Latino women, who were victims of domestic violence, including spousal rape, primarily turned to the church for assistance. Although research is limited, some studies have contended that conservative religious beliefs on traditional gender-roles have minimized or

ignored the seriousness of spousal rape. Ecclesiastical documents of various kinds have historically equivocated on the subject or even denied the existence of spousal rape. This analysis finds the roots of this denial in traditional Catholic ideology and a centuries-old patriarchal culture within the church that calls for male dominance. These ideals are clearly conveyed in documents including *Gaudium Et Spes* authored by Pope Paul VI, Charter of the Rights of the Family presented by the Holy See, and even some verses from the Bible that have been used to justify male superiority over the female. Within these gender frameworks the concept of “spousal rape” appeared contradictory and foolish; male power and privilege within the marriage, arguably, extended naturally to the bedroom. This study ultimately seeks to expose the hidden conflicting ideologies and beliefs that make clear that the Catholic Church, until relatively recently, did not recognize spousal rape.

Transgender Representations in Media: Trans Reactions to Trans Media Representations

Stephanie Sandlin

Elizabeth Kissling, Women's & Gender Studies

The academic literature surrounding transgender experiences has grown substantially across multiple disciplines over the last twenty years. One area has been neglected – media studies. Media and communication studies that focus exclusively on trans issues have only come into existence in the last few years leaving openings for rich qualitative analysis into how media represents transpersons. Many transpeople have spoken in informal settings how inauthentic and unrealistic television media is in its portrayal of transpeople. This study explored those informal commentaries and took two pieces of television media, the first the NBC television network drama *Law & Order: SVU* episode titled *Transgender Bridge* and second, *The Jerry Springer Show* episode titled *Secret Transsexual Mistresses* and presented them to groups of transpeople at the Ingersoll Gender Center in downtown Seattle. Operating as a focus group two different sessions of participants watched the media. They answered set questions, but also added their own discourses that they felt needed inclusion. The resulting data found themes of disenchantment that the media producers do not take enough account of trans voices and values, the continued trope of the tragic transgender person and in the case of Jerry Springer promoting transphobic even encouraging violence upon transpeople. Many other smaller unexpected themes emerged as well. This study while small brings trans voices out of informal commentaries and adds their unheard voices to the field of media studies literature analyzing how representation does matter.

Ethos, Pathos and Changing Modalities in the Composition Classroom

Katherine Setzer

Justin Young, English

The rhetorical elements of communication are dynamic—a pendulum that swings back and forth based on the rhetorical situation I am interested on how the three elements of communication: logos, pathos, and ethos are affected by changing modalities in the first year writing classroom. Given the field's nascent beginnings are imbued philosophy, traditional composition pedagogy emphasizes logos as main avenue of persuasion, leaving other elements (pathos and ethos) largely under taught. In today's multi-modal world of video, audio, and graphics, the writer becomes increasingly less of a disembodied voice—writers are accessible via YouTube, reddit, or twitter. These modes of composition promote ethos and pathos as avenues of persuasion in more prominent ways than written words alone. With access to the writer's image, the writer's blog, the writer's instagram, readers may have more access to delve into the author's ethos (character). In the political arena, methods of persuasion have shifted from evidence-based to emotional appeals (pathos). Emotional arguments are often dismissed in intellectual circles and within the first year writing classroom. However, to ignore emotional arguments is to leave students unarmed against a powerful avenue of persuasion. Rather than to ignore emotional arguments entirely, composition instructors should instead position pathos as a tool to be used by students to persuade.

Christianity - A Platonic Religion

Raymond Shiner

Terrance MacMullan, Philosophy

In this presentation I will show that Plato did much more than just help found our modern education system by building The Academy. Plato's works played a definitive role in shaping and spreading Christianity. Christianity is the world's largest religion, with about 31% of the world's population identifying themselves as Christian. Few people know about Ancient Philosophers such as Plato, Plotinus, and St. Augustine, or about their effect on major religions such as Christianity. Plato's philosophies of how the physical world is a lesser copy of a higher realm of spirit and that one's spirit and body are separate entities shaped not only the culture that we exist in today, but also the world's largest religion, Christianity. This presentation will show how Plato's influence on Christianity was primarily transmitted through the work of St. Augustine, a Neo-Platonist philosopher who was one of the most influential writers of the Christian faith. Regardless of who you are, what religion you may or may not follow, or what you believe about the divine, understanding how Plato's Philosophy has shaped religions is essential for every person that lives on this planet. Through understanding the philosophies on which many religions are based, we better understand cultures and the people that live in them. Those attending this presentation will see and understand why without Platonism, Christianity as we know it would not exist.

A Meta-Analysis of Studies Evaluating the Financial Benefits of a Bachelor's Degree

Philip Siler

Kevin Pirch, Political Science

The paper/project will be a meta-analysis of studies evaluating the financial benefits of college education, with a particular emphasis on searching for methodological flaws. Two seemingly-common methodological flaws are predicting graduate career success using numbers from mid-career professionals and failing to account for students who did not graduate but who did accrue considerable debt.

Blood, Soil, & Crime: A Challenging Mix

Jolene Strand

Peter Bilous, Chemistry & Biochemistry

Bloodstains found on soil surfaces at outdoor crime scenes are difficult samples for forensic scientists to analyze and obtain good quality DNA profiles. Soil is a complex matrix containing substances known to inhibit DNA amplification by the polymerase chain reaction (PCR) procedure. Many common commercial DNA extraction kits do not effectively eliminate these PCR inhibitors. The focus of this study was to evaluate two DNA extraction kits specifically designed for soil samples, the ZR Soil Microbe DNA MiniPrep™ and the QIAGEN QIAamp DNA Stool Mini Kit, and compare the quality and quantity of DNA extracted by these kits to DNA obtained with the QIAGEN QIAamp DNA mini-kit. Samples were prepared by adding a drop of blood to a known quantity of soil. Samples were then left to dry before performing DNA extraction using the three kits. Six soil types were used to determine if different soil types have any impact on the effectiveness of the extraction procedures. The extracted DNA was quantified using qPCR and DNA profiles were obtained by PCR amplification of short tandem repeat (STR) genetic markers. The results of this study will determine which of these DNA extraction procedures is optimal for the analysis of bloodstains on soil.

Philosophical Prejudice: Nietzsche on Morality

Loni Taber

Terrance MacMullan, Philosophy

As a part of an in depth discussion of the philosophy of Fredrick Nietzsche I will be critiquing the concept of morality and his specific type of valuation. Fredrick Nietzsche was an iconoclast. He was a creator and a destroyer of values. For this reason I will discuss his chapter titled "On The Prejudices Of Philosophers", taken from, Beyond Good and Evil and Oral Presentations ~ 77 ~

compare the underlying connections in it to his claims about Christianity. Furthermore, hidden in the text is Nietzsche's own axiology. He elevates his own will to value as an example of the best kind of system for overcoming. It is an axiology of authenticity. I will then show how in spite of his criticisms about philosophers Nietzsche is in fact an advocate of continuing the pursuits of wisdom. This critique is yet again another clever obstacle course to guide those with ears to become creators of value in Nietzsche's own image and then overcome even him.

Climate Change and Moral Obligations

Loni Taber

Terrance MacMullan, Philosophy

Current projections for global climate change are problematic. There are high levels of atmospheric carbon, melting ice caps, pollution, species extinction, oceanic acidity levels rising, and depleting soil and fresh water resources among numerous other categories of concern. In a world where knowledge is prolific and science is easily accessible more people understand that the dire effects of human industry and consumption are causing unprecedented negative impacts to the environment. Environmental degradation is a product of human progress. For this reason there are two main concepts I will be analyzing in regards to the problem of human-environment interaction. These concepts are intentionality and consequence as they are often viewed in relation to moral decisions. The importance of these two topics allows us to consider both the axiological indicators that have justified previous behavior and the perceptual acceptance of false truths. I will be arguing that we are morally obligated to re-evaluate current cultural norms that propagate the misuse and mistreatment of non-human entities that are contributing to the problem of global climate change. An important aspect of this new moral agenda is to showcase the importance of a pragmatic and holistic conception of anthropocentric value since it heavily influence human behavior and can also help inform moral decisions that are beneficial to the biosphere at large.

Discrepancies in Game Theory: Why Different Optimal Strategies May Exist Despite Equal Payouts

Nik Taylor

Mark Holmgren, Economics

Game theory is a mathematical model where usually two rational decision makers are either forced to cooperate or compete for the best possible outcome given what the other party is doing, and is a field of interest in both behavioral and mathematical economics. In order to determine the best possible strategy for a player, one must calculate a Nash equilibrium, which is the best possible solution for a player given what the other player is doing. Sometimes in a game, the players converge to a pure Nash, a situation in where both players cannot be made better off with a differing strategy, creating a cooperative game. Many games however, are competitive in nature, and thus players must choose their outcomes based on probabilities which are derived from the payouts of each option and what the other player could do, creating a mixed strategy. Games such as prisoner's dilemma and matching pennies are situations where both players have the same mixed strategy and same payouts. One particular case that the author intends to investigate, is in two player games where the two parties have different mixed strategies despite having the same payouts. In order to better illustrate this, an example will be shown using letters as payouts, and another example will be shown using data that was collected from a game played by economics students, to show abstract and concrete examples of this discrepancy.

Will Large Dam Removal Restore Native Plant Diversity? Trends on the Elwha River, Washington.

Cody Thomas

Rebecca Brown, Biology

Large dams have been shown to reduce downstream plant diversity, but dam removal may reverse these effects. The removal of two dams on the Elwha River, Washington—the largest dam removals to date—provides a unique opportunity to observe the effects of dams and their removal on riparian vegetation. Prior to removal, native species richness was 45-50% lower downstream from dams on the Elwha River, compared to reference reaches upstream from the dams. The objective of our research was to determine whether dam removal will reverse this effect. To address this, we surveyed vascular plant species composition and cover at ~75 plots (100 m² each) on 15 cross-river transects located above, below, and between the two Elwha reservoirs and across riparian landforms. Plots were sampled twice before (2005 and 2010) and three times after (2013, 2014, 2016) dam removal. There was no significant change in downstream diversity and composition immediately following dam removal. However, in 2016 we found a slight, non-significant increase in native species richness below the dams ($p = 0.08$), continuing an upward trend from previous years. We predict that with more time, species richness will increase to reference levels.

Synthesis and Reactivity of New Borohydride Compounds

Brena Thompson

Eric Abbey, Chemistry & Biochemistry

Organoboron compounds have many applications in the field of chemistry. Boronic acids and esters are used in Suzuki-Miyaura coupling reactions, alkylboranes are valuable hydroboration reagents, and metal organoborohydrides are commonly available reducing agents. Organoborohydrides typically have one to three organic functional groups bonded to a negatively charged four-coordinate boron. These readily donate a hydride (H⁻), which can act as a nucleophile in S_N2 reactions or can be used to reduce ketones, aldehydes, esters, and many other species. By changing the functional groups attached to boron, we can change the reactivity of the B-H bond. Our research group has designed and optimized a new method that allows easy access to many functionalized borohydrides which were previously inaccessible. By examining various metal hydrides, we discovered conditions that convert potassium organotrifluoroborates (KRBFB₃) to the desired sodium organoborohydrides (NaRBH₃) at room temperature. These conditions are tolerant of many functional groups, allowing us to synthesize and characterize a wide range of organoborohydrides. With broadly functionalized organoborohydrides now accessible we are examining their hydricity with computational and electrochemical methods in order to quantify the effects of diverse organic substituents on the reactivity of the B-H bond. We hope that further understanding the reactivity of this bond will permit the rational design of selective and functional group compatible reducing agents, ligands for transition metals, and hydrogen storing materials.

Rap's Role in Keeping Poetry Alive

Eloy Velasco

Max Hohner, English

The popularity of poetry has declined in the last forty years. Poetry before the inventions of the modern era was a major form of entertainment. The popularity of poetry in the present era is relatively small compared to the following it had during the Victorian and American Romantic eras. Poetry in present times thrives within the musical genre rap. The poetic structures and elements are used by rap artists such as: Notorious B.I.G., Tupac, Rakim, Jay-z, Kendrick Lamar, and Calle 13. Rappers create literature similar to that of poetic icons such as: Benjamin Johnson, William Shakespeare, Walt Whitman, Edgar Allan Poe, etc. Calle 13's music can be compared to W.B. Yeats' "Easter, 1916", both forms of poetry describe the vast emotions they felt about their surroundings. The use of poetic elements in rap music is helping keep poetry alive; also, the stories connect with listeners as they describe struggles of the impoverished. Rap though, is not fully considered poetry or taught as poetry; some aspects of the rap genre are considered socially unacceptable. Artists use rap as an outlet to tell a story with carefully chosen words, like their historical counterparts. Rhyming is a major component of rap music on the surface; below the surface though, there is a rich use of the type poetic elements that have

kept poems circulating for centuries. Popular poetry is now sustained by rap artist, unbeknownst to the listening population.

Emotion in Translation: Korean to Spanish

Lidia Velasco

Michael Zukosky, Anthropology

With the growth of globalized media, researchers have focused on how to translate across cultures and decipher emotions, especially when translating popular media. The components included in translation are not only knowledge of the language, but also knowledge of the cultural connotation expressed by a word. Conducting research on Korean to Spanish translation has generated a study that requires a precise translation based on emotion in both languages. Using a children's animated movie, I analyzed the translation using theories based on holism and humanistic concepts. My study showed that the word choices of translators affect not only the story, but also the characters themselves. There are emotions in Korean that are not translated into another language, due to the differences of how their culture expresses emotion. In this study, the translator of this animated movie decided to use words that did not express what was happening in the scene. It is evident that the circumstances in the movie may have made it difficult to make a translation true to the emotion. However, translators must decide on making a translation that is true to the emotion that the characters are feeling or constructing the feeling in a way that the audience would understand. Translators should realize that choices of words when translating creates an opportunity to understand the expressions in different ways.

Sensitivity Analysis of a Circular and Square Piezoresistive Pressure Sensor for MEMS

Applications

Blaine Wagner

Awlad Hossain, Engineering

Piezoresistive materials are characterized by a change in their electrical resistivity when a mechanical strain is applied. Piezoresistive pressure sensors are the very-first products of MEMS (Micro-Electro-Mechanical Systems) technology to be widely used in biomedical applications, automotive industries and household appliances. In this research we propose to analyze the sensitivity of a four-terminal piezoresistive sensor commonly referred to as "van der Pauw (VDP)" structure. In particular, we are interested to compare the sensitivity when the VDP structure is circular or square in shape. The VDP structure is usually fabricated on silicon diaphragms. The sensitivity of the VDP sensor is affected by misalignment (i.e., orientation) during the etching/diffusion process, the size of the sensor relative to the size of the underlying diaphragm, patch size where the current & voltage are determined, and on their global positions. A 3D finite element (FE) model will be developed representing a piezoresistive VDP sensor fabricated on silicon diaphragm. First, the FE model is validated, additional simulations will be conducted to understand the influence of different parameters on the resistance measurements. As MEMS devices require continually smaller size, characterizing the sensitivity of a VDP structure on the performance of a MEMS pressure sensor is extremely important.

Fin de Siècle: Fear and Loathing in Victorian Literature

Karla Wahl

Beth Torgerson, English

In "Fin de Siècle: Fear and Loathing in Victorian Literature" I focus on three fin de siècle novels that contain monstrous depictions of colonized "Others" who exist outside the norm of Victorian values and are often from or near the colonized East. The antagonists in George du Maurier's *Trilby* (1894), Bram Stoker's *Dracula* (1897), and Richard Marsh's *The Beetle* (1897), are all representative of the foreign and mystical East, and are connected by their hideous descriptive features and their ability to hypnotize their victims. Because of their similar attributes, the three antagonists show the late

Victorian sentiments against the colonized and their fear of reverse-colonization, and the threat they pose of destroying Victorian cultural values.

Math Confidence, Gender, and Major Selection

Aubrey Weekes

Theresa Martin, Psychology

The purpose of this study was to determine whether there was a relationship between gender, math confidence levels, and major selection within a college population. Preliminary research on gender, math anxiety, and math confidence has been performed. A total of 57 participants drawn from a Research Methods in Psychology course responded to a survey containing a series of demographic questions, the Math Anxiety Scale (Betz, 1978), the Math Confidence Scale (Hendy et al., 2014), and locally developed questions. The results showed no significant relationship between the means of math anxiety scores between males and females but did show a significant relationship between the means of math confidence scores between males and females. These results could suggest that females may not necessarily experience more math related anxiety than males, but that they may simply experience less math confidence than males do. Data is currently being collected on a broader population in order to analyze the factor of major selection. These results could potentially help to inform-among other things-the nationwide effort to increase female declaration of STEM field related majors and to increase female participation in the sciences overall.

Authorial Intention vs Postmodern Differance: Zola's Thérèse Raquin and the Subjective Reader

Stephanie Welzig

Beth Torgerson, English

In the 1868 edition of his novel *Thérèse Raquin*, Émile Zola provides an explicit statement about the novel's purpose and meaning. In this preface, Zola addresses many of his critics directly, and lambasts them for their pornographic interpretation of the novel. For Zola, *Thérèse Raquin* functions as a kind of empirical study of human temperaments rather than an illicit romance novel. Because contemporary literary scholarship has deemphasized authorial intention, Zola's preface raises interesting questions about the readership process. In my essay, I examine Zola's preface within the framework of deconstructionism, and compare Zola's intentions with popular and scholarly interpretations of the novel.

Beyond Labels And Boundaries: Queer Chicana Individuals And Psychological Identity Development

Minerva Zayas

Jessica Willis, Women's & Gender Studies

Chicana women experience gender oppression and have actively challenged gender bias since before the start of the Chicano social protest movement (Garcia, 1997). Historically, as Mexican American women and men started working towards equal rights, Chicana women have experienced marginalization because of their voice and gender status. Additionally, queer Chicana women, or women that identify within the LGBTQ+ communities, have been oppressed within the Chicana feminist movement. Minimal research has been performed on the positive psychological identity development of Queer Chicana women. By using a mixed methods approach to challenge general ideas around the LGBTQ+ community and wellbeing, this research seeks ways to serve diverse ethnic and sexual minorities. Highlighting Chicana women's experiences around sexism, culture, and religion, I will be performing in-depth interviews on LGBTQ+/Queer Chicana women that attend Eastern Washington University. As I continue to conduct interviews, I predict that my analysis will bring greater visibility to Queer Chicana women and the diverse ways in which they construct their sex and gender identities. Their narratives will contribute to enriching towards a greater understandings of the ways that Queer Chicanas in the United States frame selfhood

Poster Abstracts

Social Media and Its Effects on Relationships

Jayde Albright, Jenny Harrison, Jai'Lysa Hoskins, Brandon Jenicek, Kevin Kminek, Lathan Ostlie, Alexa Shaw, Heidi Hilman

Heidi Hillman, Psychology

Social media has turned communication into a social dialogue, it allows us to re-connect with lost friends, and maintain connections with family and friends. Social media is now the number one use for the internet and this percentage is growing larger every day (Qualman, 2009). As a result, the world is more connected now than ever but what are the implications for relationships? Despite the widespread use of social media, few studies have looked at whether people would modify their social media use to change the dynamics of their relationships. We surveyed 191 college students asking them about the impact of their social media use on their relationships. Of the respondents, 68% reported they checked social media sites multiple times during the day. An interesting finding was that 18% of our respondents said they did not need to change their social media use, but reported their partners needed to change their social media use. Due to relationships, of the respondents 29% reported they decreased their social media use and 28% reported creating joint accounts.

Service – Learning: Access to Unlimited Electronic Recycling Resources.

Kolod Aljohani

Teena Carnegie, English

Living in a world where 70% of our waste is comprised of electronics, and only 20% of the waste worldwide is being recycled. E-waste comes from multiple sources like governments, companies and homes. E-waste includes information technologies, personal computers, handheld technologies, large and small household appliances, and lighting equipment. Many people do not have the confidence or the knowledge to fix their electronic devices. I was one of those people until I had the chance to work on a service-learning project with iFixit. From this service-learning project, I was not only able to create and write my own repair manual but also to help others repair their devices through the creation of an online wiki. In this presentation, I will examine the issue of the e-waste, review how easy it is to repair a device, show how repair helps to reduce electronic waste in our environment. I will also describe how I completed the project working with a team and iFixit. The iFixit project helped engage me in an interactive classroom experience, and I was able to share my new found knowledge with an international audience.

Supplemental Iron Offsets the Antibacterial Properties of Manuka Honey

Laurisa Ankley

Robin O'Quinn, Biology

Pathogenic bacteria have developed resistance to every antibiotic currently available, driving scientists and medical professionals to find effective alternative treatments. Honey has captured the attention of researchers, due to its long history of effective medical use. Among honey's important properties is its effectiveness as an antibacterial. The antibacterial action of most honeys comes from the production of hydrogen peroxide, however in the case of Manuka Honey, methylglyoxal, found in the nectar of *Leptospermum scoparium* flowers, increases its antibacterial effects. The exact mode of action used by Manuka honey remains unknown but a combination of low pH, high sugar content, and high concentrations of methylglyoxal work together to kill bacteria. Previous research predicts that there are components of honey that interfere with the ability of microbes to obtain iron. Thus, we hypothesized that supplemental iron could offset the antibacterial action of Manuka honey. To test our hypothesis, we first established the minimum inhibitory concentration of Manuka honey against *Escherichia coli*. Incubation of *E. coli* with a concentration of 12.5% Manuka

honey consistently prevented growth (N=16); this was also the minimum bactericidal concentration (N=11). When 25µM-500µM of iron (ferrous sulfate) were added to *E. coli* cultured with 12.5% Manuka honey, visible growth (N=48) and or viability (N=48) was detected. Our results support that supplemental iron can offset the antibacterial effects of Manuka honey and suggest that Manuka honey may interfere with bacterial iron acquisition mechanisms.

Purification and Pre-Characterization of the R178C ITPase Mutant

Caitlin April

Nicholas Burgis, Chemistry & Biochemistry

The human inosine triphosphate pyrophosphohydrolase (ITPase) protein acts as a housekeeping enzyme by monitoring nucleic acid precursor pools and removing abnormal nucleoside triphosphates, such as (deoxy)inosine 5'-triphosphate. ITPase is encoded by the ITPA gene. Recently, ITPA mutation was identified in a group of patients who exhibited symptoms of early infantile encephalopathy. These symptoms included severe and progressive microcephaly, seizures, and death. Position 178 is located within the substrate selectivity pocket of the enzyme and is thought to be crucial for substrate selectivity. Previous data for a similar missense mutation, showed severely reduced enzyme activity when compared to wild-type, suggesting that arginine 178 was essential for enzyme activity and function. Our lab set out to investigate why the R178C mutant resulted in lethality for humans. Fifteen other ITPA mutants, including R178A, were successfully purified from *E. coli* cells using standard purification protocols. However, the R178C was found to be insoluble in *E. coli* cells, and an alternate purification protocol had to be developed. This new protocol was also used to isolate the WT enzyme in order to contrast its activity with R178C. Enzyme activity of the purified proteins was quantitated by HPLC. Upon comparison, R178C displayed much lower enzyme activity than WT. Our results indicate the R178C ITPase has the R178C ITPase has poor stability and much lower enzyme activity than WT, suggesting that patients who are homozygous for the R178C mutation lack the protective activity of the ITPase enzyme.

Anthelmintic Resistance in Equine Strongylidae of Eastern Washington

Samantha Ayotte, Molly Sherwood, Sarah Wyer

Javier Ochoa-Reparaz, Biology

Strongyles (Strongylidae) are among the most common parasites found in horses. These parasites can cause colic, aneurysms (most commonly of the mesenteric artery), and even death. Anthelmintics are more commonly known as dewormers. Strongyles are targeted by equine anthelmintics due to infection prevalence. Anthelmintic success has declined as administration levels have increased. This phenomena has left scientists wondering how to best combat the emerging resistance. Broad spectrum anthelmintics have traditionally held a high appeal because they claim to treat all of the common equine parasites. It is therefore reasonable to hypothesize that in most areas, it is possible that the efficacy of narrow spectrum anthelmintics in eliminating strongyles has been preserved. Efficacy was measured using fecal egg count reduction tests (FECRTs) conducted with 45 horses from the Busy Bee Ranch and Equestrian Center in Spokane, WA. We found that the narrow-spectrum anthelmintic, fenbendazole, did not have a higher efficacy than the broad-spectrum anthelmintic, ivermectin, which exhibited higher FECRT percentages.

A Sustainable Contribution to the Community

James Bailey

Teena Carnegie, English

Service Learning is a symbiotic relationship between a student or student group and a community partner wherein both gain in terms of deliverables and experience. It's designed to address a specific need while helping to teach the students the skill sets they will need to move forward as meaningful, contributing members of the community. The contribution to community through the service learning experience cannot be undervalued. Working on the redesign of the Sustainability Capstone Manual for Eastern Washington University provided, along with the work experience, a sense of connection and

lasting impact. This project required a holistic approach with a number of different tools to produce the product that the client needed in order to move the program forward. More than that was the pride I felt at contributing to a project that will positively affect students for years to come. If chosen, the poster and my presentation will cover the process of developing the redesign project, how it impacted me, show how it addressed the needs of the university and the students, and provide an impetus as to how the connection to the community at EWU can be increased by putting a greater emphasis on using student created content.

ESP for Baristas

Taylor Baldwin, Raghda Almeyrat, Rachel Musser, Erin Locke

Gina Petrie, Modern Languages & Literatures

This presentation shares the results of a needs analysis (Basturkmen, 2010) of the English for specific purposes (ESP) used by baristas at Starbucks. We carried out a needs analysis based on workplace observation, brief interviews with workers at Starbucks in ordering, and our own experiences as customers at coffee shops to locate the specialized occupational language needed. The results of our study are significant in light of Starbucks' pledge to hire 10,000 refugees over the next five years. Many of these new employees will likely speak English as a second language and will need to learn the specific language required by the work as a barista. This poster presentation demonstrates that ESP needs analysis methods can identify such needs and lesson plans in an ESP classroom can be used to address those needs. We found four specific areas of need. Those are, training and obtaining a food handlers permit, coworker to coworker interactions, customer interactions at the counter, and customer interactions in the drive through. We have developed an eight-week course that addresses all four of these areas with assessments after each section and a cumulative assessment at the end. The project would be able to be given to Starbucks who could then choose to implement the course for training employees who speak English as a second language. Basturkmen, H. (2010). *Developing Courses in English for Specific Purposes*. New York: Palgrave Macmillan.

Getting Grants for the Guilds' School

Josiah Baldwin

Teena Carnegie, English

Service-learning allows students to become more aware of issues and needs in their communities. Through service-learning projects, students get to practice their skills while learning about and improving their community. In my proposal writing class, I worked with the Spokane Guilds' School. During the project, I came to realize the need for the Guilds' School; roughly 1,000 children born in the Spokane area each year have a developmental. Not only does the Guilds' School meet an important community need, it has needs of its own. The Guilds' School never turns away a family due to an inability to pay, meaning they operate on a strict budget. I was unaware of all of these factors prior to working with the School. With my poster, I explore how my service-learning project increased my awareness of the needs of developmentally delayed children in Spokane and how the Guilds' School meets those needs. My grant writing project helped the Guilds' School meet the needs of its community while pushing me to become a better technical writer and widening my understanding of my community.

Measures of Daily Physical Activity and Health in EWU Faculty and Staff

Taylor Bennett, Duane Dahl, Quintin Barnard, Mallory Taylor, Chloe Williams, John Weaver

Christi Brewer, Physical Education, Health & Recreation

Many EWU faculty and staff tend to be sedentary throughout the workday. This contributes to the development of chronic diseases. The purposes of this study were to characterize workday physical activity (PA) and examine associations between PA and health indices. The project was approved by EWU's IRB. Faculty and staff were verbally invited to participate and provided informed consent. Resting heart rate (HR, bpm) and blood pressure (BP, mmHg) were assessed.

Body composition was assessed using air displacement plethysmography. Participants (n=7) reported daily steps for 3-weeks, and these values were averaged to generate 1 PA score (steps per day, SPD) for each participant. One participant was excluded due to missing data. SPD was highly variable (range: 3527 + 501 – 15693 + 134 spd) and averaged 8,4962 ± 5026 spd. Correlational analysis revealed a positive correlation between SPD and systolic BP ($r = 0.95$, $p=0.004$) and diastolic BP ($r = 0.87$, $p = 0.02$). It is possible hypertensive individuals were intentionally taking more steps per day; however, this is speculative. ACSM recommends 7,000 spd, a value which half the sample did not meet. Although the sample was small, the data suggest faculty and staff might benefit from targeted PA interventions.

Analysis of Convergent Evolution of Ion Channel Toxin Adaptive Mutations within Amphibians

Alex Breeden, Sameer Rijal

Randall James,

All over the world are examples of convergent evolution across species allowing for resistance to toxins. Notably, the relationship between the golden dart frog (*Phylllobates Terribilis*) and the Melyridea beetles being one of the most studied relationships. Most of these convergent links are based around the permeability of cell membrane sodium channels. Batrachotoxin is the deadliest toxin characterized and is primarily used as the golden dart frog's defense. The toxin modifies the sodium channel to where the channel remains open and becomes non-functional. The sodium and potassium gradient shifts necessary for nerve transmission no longer function and nerve function ceases. But the poison dart frog's only predator (*Lemidophis epinephelus*) is resistant due to mutations in their sodium/potassium pump gene leading to a resistant sodium/postassium pump protein a highly similar toxin; tetrodotoxin. Resistance to tetrodotoxin confers resistance to batrachotoxin. Our question is to see if there are animals in the Inland Northwest of the United States that have similar toxin resistance convergent evolution like their distant relatives in the neo-tropics. We are using DNA extraction, PCR, and DNA sequencing of targeted loci of the sodium/potassium channel gene to compare local amphibian toxin resistance to that of the golden dart frog.

Expanding the Quantitative Analysis of Acetaminophen in Children's Liquid Pain Relief Medicines by Cyclic Voltammetry (CV)

Nicholas Broderius

Wes Steiner, Chemistry & Biochemistry

Cyclic voltammetry (CV) is one of the most versatile electroanalytical techniques for the study of electroactive species. The effectiveness of CV results from its capability for rapidly observing oxidation-reduction (redox) behavior over a wide applied potential range that can be used to quantitatively calculate the concentration of many electroactive chemical species of interest in complex sample matrices such as children's liquid pain relief medicines. To that end, for this experiment, CV was used to determine the acetaminophen, formal chemical name N-4-acetamidophenol (APAP), concentration in an Equate brand samples of children's liquid pain relief medicine using a screen printed carbon working electrode. A standard stock solution of 0.010 M APAP in saline solution was created and used to generate both a five-point direct calibration and a six-point standard addition curve. From the equation of the linear least Squares (LLS) regression lines generated for these calibrations curves the concentration of APAP in the diluted brand samples and QC standards could be determined. The final undiluted concentration values for APAP in the Equate brand of children's liquid pain relief medicines were then determined and compared to the manufacturer's value to provide percent relative error values that were well within the stated concentrations of APAP as labeled by the manufacture.

Surface Water Sampling Within a Large Upper Columbia River Point Bar Complex Containing Metal-rich Slag Deposits

Calen Busch

Carmen Nezat, Geology

Deadman's Eddy is a large meander and bar complex in the Upper Columbia River in Northern Washington and a site of significant sediment accumulation and complex hydrogeologic interactions. The 150-acre bar complex is comprised of sands, gravels, cobbles and is periodically flooded from changing river water levels due to seasonal flows and upstream multi-watershed-scale Canadian dam management. Metals smelting activities over the last century have released millions of tons of discharged sand-sized granulated slag and liquid wastes contaminated with heavy metals directly into the river upstream. Extensive granulated slag waste deposits have congregated within the lower energy, downstream portions of the Deadman's Eddy bar complex and settled into the interstitial spaces of gravel and cobble substrates. Slag associated porewater exhibits elevated heavy metal concentrations toxic to sediment dwelling benthic organisms and has been reported above state water quality criteria. Our study over the summer of 2016 investigated surface water only and sampled 12 settings within the bar area in both June and July. Isolated pools, upstream and downstream positions, and springs were analyzed for selected trace metal concentrations and other geochemical parameters. Metal concentrations in all but one location were detected under surface water quality levels deemed toxic for aquatic life. Calcium concentration changes and field observations over the summer suggest multiple potential surface and groundwater inputs to and through the bar complex, particularly along a cobble-dominated floodway zone.

Genomic Analysis of *Pseudomonas Fluorescens* L5.1-96 and Its Role In Take-All Decline

Amanda Chandler

Ruth Kirkpatrick, Biology

Take-All disease is caused by a pathogen that invades the roots of common wheat (*Triticum aestivum*), cutting off the water and nutrient supply from the soil. The disease is found worldwide, is caused by the fungus *Gaeumannomyces graminis* var. *tritici*, and can be treated biologically with the antibiotic 2,4-Diacetylphloroglucinol (DAPG) produced by *Pseudomonas fluorescens*. *P. fluorescens* is a bacterium that exists naturally in the rhizosphere of cultivated wheat, however, it takes many years of continuous wheat cultivation to establish a *P. fluorescens* population of sufficient size to suppress Take-All disease and produce profitable wheat crops. Previous research has found that *P. fluorescens* L5.1-96 acts most efficiently against Take-All in its ability to rapidly colonize wheat roots. The purpose of this experiment was to identify genes unique to *P. fluorescens* L5.1-96 in order to better understand its superior wheat root colonizing ability. *P. fluorescens* L5.1-96 DNA was isolated from plasmid vectors, sequenced, and analyzed using the online software FinchTV and BLAST. *P. fluorescens* L5.1-96 DNA sequence analysis results suggest high similarity to many *Pseudomonas* species and no sequences were found to be unique to *P. fluorescens* L5.1-96.

Analysis of Sea Lion Predation Patterns of Endangered Salmonid Stocks Along the Eastern Pacific Coast using Taq Man Probes Targeting Species Specific SNPs

Aidan Chaparro, Cydni Marshall

Randall James,

Food webs and Food chains consists of many complex interactions among multiple organisms. The extensive diversity and complexities create challenge in comfortably assessing said interactions without in depth analysis and interpretations. Specifically, within marine food chains, investigation of bones and remains from scat is often the most feasible method of analysis. We are analyzing the Sea Lion diet, particularly their potential consumption of endangered Salmonid stocks along the Eastern Pacific coast. Within this trophic interaction, two federal Acts, the Marine Mammal Act protecting Sea Lions and the Endangered Species Act, protecting the Salmon, clash. Since one protected species is consuming another, the question as to the best management of their interaction arises. Prior research has shown that the impact of Sea Lions

on Salmonid species is significant and continues to effect Salmonid populations negatively. Previously, qualitative visual data has been the best method of collection; however, in our research we are using quantitative PCR with species-specific Taq Man probes to expose species identifying Polymorphisms in the COI gene. By doing so, individual Salmonids can be identified, and a more in depth analysis of the diet of Sea Lions may be understood. From this, a better interpretation of the Sea Lions impact of Salmonids can lead to a model for future studies and future preservation practices to better manage this trophic interaction.

Biofeedback Intervention for Anger Management

Charles Chapman

Charalambos (Charlie) Cleanthous, Psychology

Although the two are not synonymous, stress is usually tied into anger; both of which have been proven to have negative health effects. Biofeedback has been shown to reduce stress and is suggested as an intervention for anger management. One of the goals of the present study was to attempt to target my anger so that it was at appropriate levels. The approach was to use biofeedback to monitor heart rate variability (HRV), practice focused breathing, and use positive thoughts when I felt angry; this approach was also utilized as a maintenance strategy. The intervention took place at home but the measurement of frequency and intensity of the emotion took place both at home and in public. The baseline was 12 days; interventions occurred twice daily, with times of each increasing every 7 days and tracked for 4 consecutive weeks. The intervention showed a significant reduction in the number of anger events, as well as a marked decrease in the intensity of each event. Biofeedback paired with HRV can be a successful intervention for a broad range of anger issues. The limitation is that the intervention was with a single person and self-implemented.

Evaluating the Toxicity and Teratogenicity of Two New Antifungal Drugs

Josh Chastek

Charles Herr, Biology

Danio rerio (zebrafish) is a vertebrate model used by researchers in the fields of genetics, developmental biology, and immunology. *Pseudoloma neurophilia* is a pathogenic microsporidian fungus infecting zebrafish being used in research. Other species of microsporidian fungi are infecting wild animals resulting in sick populations. Current antifungal drugs are teratogenic, causing malformations during embryonic development, and toxic when used to treat fungal infections in fish. In 2015 two new antifungal drugs, N'-(3-bromo-4-hydroxybenzylidene)-2-methylbenzohydrazide (BHBM) and 3-bromo-N'-(3-bromo-4-hydroxybenzylidene) benzohydrazide (D0), were developed that target a fungi specific biochemical pathway. The drugs have been tested on mammalian cells in culture against a wide range of fungi. Both drugs are effective at inhibiting the fungi and cause no harm. Our study consists of a series of experiments. We first dosed fish with these drugs in the tank with treatments up to ten times the minimum amount necessary to kill similar intracellular fungi (10x) without toxic effects. The same treatments were applied to fish cells in culture without toxicity. Next *Drosophila melanogaster* 1st instar larvae were placed on media containing treatments up to 10x. The flies developed into adults and were able to reproduce normally showing no signs of teratogenic effects from the drugs treatments.

Athletes Hydration Knowledge: Drinking Preferences in Division 1 Collegiate Athletes

Andrew Cheney, Jessica Weise

Garth Babcock, Physical Education, Health & Recreation

An athlete may have many product options for hydration. The question then, is why athletes choose a specific product type. Is it knowledge of the product and what it can do for the body, or is it simply because it is the popular thing to do? A recent study done on adolescent females showed that a single education session alone was not successful in changing hydration behaviors, but prescribing individualized hydration protocols showed improvements (Michelle A. Cleary, 2012). To further this research idea, we will send out a research survey that asks Division 1 collegiate athletes what their

hydration preference is for practice and games and why they have this preference. The purpose of the study is to see if the athletes are knowledgeable about their hydration preference and if it changes from practice to games. We hypothesize that the majority of the athletes will be limited in reasons for their hydration status.

Brain Injury, Executive Dysfunction, and Related Comorbidities

Lisa Chudoba

Jonathan Anderson, Psychology

The current study aims to examine the relationship between brain injury, executive function, and common comorbidities of brain injury in individuals with brain injury, compared to individuals without brain injury. Executive functioning includes cognitive processes related to working memory, attention, problem-solving, and planning. A comorbidity is when a person experiences two or more disorders or conditions at the same time. The purpose of the study is to investigate the relationship between impaired executive functioning, common comorbidities of brain injury (specifically: substance use, aggression, depression, and suicidal behavior), and the role that the location of brain injury plays in relation to these factors. Participants will be recruited via social media to complete a web-based survey which includes measures that assess executive dysfunction, depression, aggression, substance use, and past suicidal behavior. It is hypothesized that overall, individuals with brain injury will score higher on these measures compared to individuals without brain injury. Due to the role that the frontal lobe plays in executive functioning, we hypothesize that within the group of individuals with brain injury, those with injury to the frontal lobe will score higher on these measures, compared to individuals with a brain injury that does not include damage to the frontal lobe. Implications of this study include the possibility of identifying whether individuals may be at higher risk of experiencing substance use, aggression, depression, and/or suicidal behavior after sustaining a brain injury, based on their brain injury location.

Kinetics of Notch Signaling During Osteoclastogenesis

Rachel Clark

Jason Ashley, Biology

Osteoclasts are vital in resorbing bone tissue during growth or remodeling. The regulation of these osteoclasts is important in maintaining bone physiology. Improper regulation can lead to different bone diseases, such as osteoporosis, the reduction of bone mass. Osteoclast development is regulated by multiple signaling pathways. One such pathway, Notch signaling, functions as an inhibitor and stimulator of osteoclastogenesis. While Notch signaling inhibits early stages of osteoclast development, it stimulates later stages. Evidence shows that the activation or inactivation of Notch signaling at certain time periods of osteoclast development can affect the differentiation of the cells. We plan to use DAPT, an inhibitor of the Notch signaling pathway to further our understanding of the Notch signaling pathway and its effects on osteoclasts. We hypothesize that early treatment of cells with DAPT will cause more efficient differentiation than cells treated later. Data from this study will further our understanding of the biphasic role of Notch signaling in osteoclastogenesis.

Head Trauma in Mixed Martial Arts: An Analysis of Fighter Earnings at the Expense of Mental Health

Mitchell Clements

Kelley Cullen, Economics

The UFC features top tier mixed martial art (MMA) competitors, moving their way up the ranks in the hopes to compete for a shot at the belt. It's most recent event, UFC 205: Alvarez vs McGregor, shattered company records for pay per view sales and broke Madison Square Garden's ticket sales record (New York had a ban on the sport until April of 2016). The intense physical action matches that of the NFL, also making it an environment where injuries are common. One of the biggest controversies with the NFL has been head trauma and the concern over player safety. Should the UFC and their

athletes be concerned about the consequences of repeated head trauma sustained in the octagon? In my proposed study, I plan to look at a sample of MMA fighters over the course of their careers in the UFC who have since retired in order to determine if significant blows to the head over the course of their careers attributes to decreased performance. The longitudinal study will take fight statistics available from Fight Metric (comprehensive MMA statistic website) for each fight that the ten fighters participated in over their careers in the UFC. Variables pulled from each fight include: the date, weight class, fighter ranking, outcome (win/lose), total fight time, age, and number of head trauma incidences incurred over the pro career of the fighter, I will measure these figures against the fighter's performance (record) and/or earnings over their career using an ordinary least squares regression. My hypothesis is that as fighters take more blows to the head, their performance will decrease until the point of retirement.

Powering Off Electronic Waste

Kendal Cler

Teena Carnegie, English

Electronic waste, also known as E-waste, makes up 70% of the overall toxic waste in America's landfills. E-waste is a general term for an assortment of electronic items--computers, televisions, cellphones--that are not functioning or are "too old" for current use. Most of the E-waste that is dumped in landfills are whole electronic equipment that could be restored and reused. The problem of E-waste on society is that it pollutes our planet which affects everyone. Due to the extent of this issue, the United States Environmental Protection Agency is collaborating with members around the world in order to take action and provide adequate solutions for stopping E-waste. One corporation that helps with this issue is iFixit, a company committed to providing tools and wiki guides to help reduce E-waste. These guides can be used by individuals to fix their electronic items instead of throwing the items away. In this poster, I will present how I increased my awareness of the E-waste issue and what I did to help improve the global community. I will describe the project, what I did, and who I reached.

An Exploration of Factors That Influence Error Correction

Sydney Cobb

Danielle Sitzman, Psychology

When provided with corrective feedback, high-confidence errors are more likely to be corrected than low-confidence errors, a finding termed the hypercorrection effect. However, recent research demonstrates that error correction is largely related to prior knowledge, while confidence may primarily serve as a proxy for prior knowledge. Participants may also be more likely to correct an error in their memory when they are able to remember both the correct answer and their original incorrect response. Thus, the current experiment sought to explore how all of these factors contribute to error correction. Participants answered 120 general knowledge questions that ranged in difficulty. After providing a response, they were asked to rate their confidence in the response, were then shown the correct response, and asked to rate their prior knowledge of the correct answer. After a delay, participants were asked to answer the same 120 questions, indicate whether or not they answered the question correctly on the first test, and recall their initial answer. It is expected that prior knowledge will be a better predictor of error correction when compared to subjective confidence, and that participants will be more likely to correct errors when they can remember their original incorrect response.

No Girls Allowed! Women's Sports Marginalized in Sports Television

John Collett

Galina Sinekopova, Communication Studies

Unequal coverage of women's sports compared to men's sports on television has been a concern since the rise of cable television. The aim of the present work is to review related research on women's sports coverage on television and to better understand why women's sports hasn't seen an increase in coverage over the past three decades. The core of the

study is based upon the 25-year longitudinal study by Cooky, Messner, and Musto that showed women's sports coverage made up just 3.2% of the sports content when analyzing ESPN's Sportscenter and sports segments of local news. From the previous study, this review chose to look at how women as a sports audience can help promote women's sports and how new media can combat some of the stereotypical views of women's sports that television reinforces. The conclusion recognizes that it all comes down to ratings for television stations and there is less incentive to break away from their current patterns unless it produces a profit. However, putting an emphasis on the need for new media to promote women's sports can help provide a voice and reason for broadcasters to incorporate more women's sports highlights in their shows.

A Search for Historical Solutions to the Rohingya Genocide

Tiago Correia

Vandana Asthana, Government

Since assuming power, Aung San Suu Kyi, has promised to bring about much needed improvements to Myanmar society. However, military action has been a constant impediment--the manifestation of which is the ongoing genocide being inflicted upon the Rohingya. I hope to demonstrate that this calamity is, in fact, a genocide, and requires international recognition as such. To find possible solutions, this paper goes on to provide an analysis of how previous ethnic conflicts were resolved. This includes highlighting similarities and differences between past events, and also figuring out what particular actions were beneficial and which were not. Perhaps most importantly, this work describes what immediate actions could be taken by the Myanmar government, Suu Kyi, and the global community.

Simulating Conditions Under which Red Flocs form from Contaminated River Bank Sediments along the Coeur d'Alene River

Kyle Duckett

Carmen Nezat, Geology

Nearly a century of mining within the Silver Valley of Idaho and Montana has led to the introduction of heavy metal rich sediments (As, Cd, Fe, Pb, Zn) into local water bodies. Heavy metals such as Pb and Zn are periodically released from the sediments, and the presence of these elements in large abundance can cause inadvertent effects on aquatic life. River bank sediments were collected from the Coeur d'Alene (CDA) River basin and sieved into various size fractions. Sediment pH was measured as a tool to predict the environmental potential for acid mine drainage. The pH for various size fractions averaged 6.2 (n=12), which suggests the presence of naturally occurring carbonates that can act as a buffer in the system. Additionally, sediments were sequentially leached to determine the relative mobility of the heavy metals within each size fraction. Sediments were extracted in four steps corresponding to the fractions that were: water-soluble, surface adsorbed, Fe and Al associated, and easily weathered minerals. Leachates are analyzed for heavy metals using an Inductively Coupled Plasma-Optical Emission Spectrometer (ICP-OES). These data will allow us to predict the conditions that optimize metal mobility in mining contaminated aquatic systems.

Immediate Effects of Water Temperature On Metabolic Rate and Behavior of White Sturgeon

Matt Duddy, Richard Souders

Paul Spruell, Biology

This study examined the effects of varying water temperatures on the routine metabolism and behavior of White Sturgeon, *Acipenser transmontanus*. The White Sturgeon is a freshwater fish that dwells in large rivers along the west coast. Reports have shown the population is in decline possibly due to environmental factors like climate change. This decline can also be caused by human interaction in the environment, such as the construction of dams. As more dams are created, river systems experience reduced flow resulting in higher temperature variability. Our objective for this study was to test the hypothesis that with an increase in water temperature, oxygen availability will drop while their metabolic rate increases,

causing the dissolved oxygen to decrease rapidly and change their behavior. This experiment provided insight on the effects slight changes of temperature have on the metabolic rate of White Sturgeon to see if there is a correlation to climate change or human interaction. We randomly selected 30 White Sturgeon from a group of 80. Ten sturgeon were then placed into three different tanks, with each tank set at 10.2°C, 13.1°C and 15.6°C. Each treatment was replicated 10 times. We measured dissolved oxygen levels for each sturgeon, before and after they had been placed into a cooler for 30 minutes. We then generated an ANOVA test of our data to test variability between temperature and oxygen consumed per gram of sturgeon. Our data showed us that the average amount of DO consumed went up for each temperature (P-value = 0.002).

The Effects of Different Recovery Positions Post-Anaerobic Work in Collegiate Sprinters

Emily Dunston, Johanna Sherman, Thea Pederson, Jasmine Magana

Annika Vahk, Physical Education, Health & Recreation

Acute recovery from anaerobic work is vital in preparing the body for subsequent work bouts; however, there is no consensus on the optimal recovery position for heart rate (HR) or blood lactate (BL) metabolism. **PURPOSE:** To determine the most effective post exercise position for optimal recovery from anaerobic work. **METHODS:** Nine collegiate sprinters participated in the study (3 males, 6 females; age: 19.4 ± 1.2 yrs). All participants completed a standard ten-minute dynamic warmup and a maximal effort 200-m sprint with an assigned two-minute recovery position (hands on head (HH), hands on knees (HK), and walking (W)) on three separate testing sessions. HR and BL were measured immediately following the sprint, and after the 2-minute recovery interval using a HR monitor and BL analyzer. **RESULTS:** The average HR post-sprint was 181 ± 12 bpm and post recovery was 125 ± 18 bpm. The HH recovery position resulted in the greatest decrease in HR ($F(2,16) = 5.447$, $p = 0.016$; average change in HH HR 51 ± 18 bpm) and was statistically different from the HK recovery position ($p = 0.022$). There was no significant difference in BL concentrations across the conditions. **CONCLUSION:** HH resulted in a greater reduction in HR than either HK or W. This finding does not support previous research that reported HK more effective in HR recovery (Bottoms, 2016). Perhaps the best recovery position depends on individual factors, and coaches/trainers should allow athletes to self-select their preferred recovery position.

20 Year Old Division I Volleyball Player with an Staphylococcus (Staph) Infection

Naomi Eastland, Ireland Hendrix, Justine Nuckols, Noah Dorr

Garth Babcock, Physical Education, Health & Recreation

Staphylococcus infection, also known as Staph infection, is a very common bacterial infection among athletes in collegiate athletics. Staphylococcus infections is a bacterial infection of the skin and those who exhibit long, continuous, and continual reappearing symptoms after initial treatments are considered carriers. A carrier is a person who has Staphylococcus aureus on or inside their body. It can be carried on their skin, or inside their nose/throat without knowledge, and they may not get an infection. Those who are carriers that haven't had an infection yet are at higher risk of becoming infected at some point in their life. Staphylococcus infections are most commonly seen in contact sports such as wrestling and football. The athlete in this case study is a 20 year old female collegiate volleyball player who was first diagnosed with this bacterial infection in May 2016. Playing in a non-contact sport, it was unusual that she had this condition. The antibiotics she was originally prescribed did not work at first because she is a carrier of this condition. She was then prescribed with a nasal spray. The purpose of this case report is to describe and identify symptoms of Staphylococcus infection and what treatments are available for this condition. This case study will also examine what to do when antibiotics do not work right away and how to identify a carrier of Staphylococcus infection.

Geologic Reconnaissance of Magnison Butte, Medical Lake, Washington

Joe Edgley

Chad Pritchard, Geology

Magnison Butte, at an elevation of 915 m, is a dome shaped hill located 11 km south of Reardan and 15 km west of Medical Lake, WA. The relief between the summit and the surrounding lowlands is roughly 140 meters, or a 9% slope. Field reconnaissance revealed that the dominant geologic units are argillite-shale, quartzite-argillite, and a fault breccia separating the two. Using the three-point problem method, the orientation of a fault cutting across the butte was determined to strike 150° and dip 88° to the southwest. The eastern footwall side of the hill consists of argillite-shale which is part of the Neoproterozoic McHale Slate Formation. The western hanging wall side consists of quartzite-argillite within the Neoproterozoic Buffalo Hump Formation. Between 150 to 50 Ma the tectonic activity of the region was dominated by east-west convergence. This produced many west-dipping thrust faults in the area and led to the formation of the Rocky Mountains. Later, at approximately 49 Ma, a relatively large number of north-south trending normal faults formed. Due to the lessening of compressional stresses over time, it is hypothesized that the steeply dipping normal fault cutting across Magnison Butte is a reactivated fault. At least 500 m of dolomite has been removed from the stratigraphic section when compared to similar stratigraphy in the Colville area. Therefore, the offset of the fault is estimated at 500 m ($500 \text{ m}/\sin(88^\circ)$). A geologic cross-section, a stratigraphic column, annotated figures, and stereonet were produced as well to more deeply understand the structural geology of Magnison Butte.

Analysis of the MADS-box Gene within *Malus Domestica* Due to the Presence of Pesticides and the Diversity They Cause

Jacqueline Egger, Julianne Socha

Randall James,

For many years' pesticides have been used in apple production. It has been known throughout the years that it has had an effect on the pests they are designed for. This leads to question if apples have also been affected by these aforementioned pesticides. It has been found that the MADS-box gene controls the expression of tissue development. MADS-box is a highly conserved region of the genome across different species; therefore, it can be compared across a wide variety of apples and may contain clues to the unintended effects of pesticides on fruit development. Plant tissue, and in particular fruit tissue, contain PCR inhibitors that are challenging to remove during DNA extraction. Recovering PCR quality DNA from apple tissue to be used for MADS-box gene sequencing is essential. We present an optimized DNA extraction method that reliably produces high quantities of DNA that is pure enough for downstream applications including PCR. This method allowed for the sequencing analysis of the MADS-box gene from several apple varieties.

Case Study of 15-Year-Old Male Football Player with a Clavicular Fracture

Madeline Elliott, Isabella Quaratiello

Garth Babcock, Physical Education, Health & Recreation

Clavicle fracture is a common condition seen in sports in which acute trauma leads to loading across the bone tissue, causing a fracture. Symptoms of a clavicular fracture appear unilaterally and present as a visible deformity. The most common mechanism for injury to the clavicle is traumatic, such as a fall onto the shoulder or a direct blow. The athlete in this case study is a 15-year-old male football player who was diagnosed following a tackle during a game. He since has had a surgical intervention to repair the fracture and is progressing well. The purpose of the case report is to describe the anatomy of clavicular fractures and the signs and symptoms pertaining to this condition. Also, the surgical procedure and rehabilitation used will be discussed. Providing a case report on this condition will assist athletic trainers become more knowledgeable and aware of a condition they may encounter in their profession.

First Fossil Occurrences Of The Sphenomorphus Species Group (Squamata; Scincidae; Lygosominae) From The Late Oligocene Namba And Etadunna Formations Of South Australia

Ricardo Ely

Judd Case, Biology

Scincidae (skinks) is represented by a poor fossil record in Australia, despite the diversity and abundance of extant Australian skinks. Thus, any fossils of their early evolution on the continent would be of great benefit to Australian paleoherpetology. Previously, the only extinct genus of Scincidae in Australia was represented by *Proegernia palankarinnensis* of the Late Oligocene Etadunna Formation. Here, we detail three dentaries, two from the Namba Formation of the Frome Sub-basin and the other from the Etadunna Formation of the Tirari Sub-basin. Though incomplete, the sole character diagnosing these skinks as pertaining to the Sphenomorphus group is the presence of an open Meckelian groove, closed in the Egernia and Eugongylus species groups. A phylogenetic analysis via maximum parsimony shows the two Namba skinks are sister taxa relative to the Etadunna specimen, which is a sister taxon to the Namba skink clade. The two Namba skinks are at least different species, but whether they are different genera needs to be determined. The Etadunna Sphenomorphus-type skink (as is *Proegernia*) is from the Minkina Local Fauna (L.F.), which is the oldest and stratigraphically lowest local fauna from the Etadunna Formation. The two Namba Sphenomorphus-type skinks are both from the Pinpa L.F. which is the oldest and stratigraphically lowest local fauna from the Namba Fm. The Minkina L.F. and Pinpa L.F. are considered to be biostratigraphically correlated with each other in age, latest Oligocene (ca. 26 million years ago). These three new taxa, plus *Proegernia*, represent the oldest fossil skinks known from Australia.

Geotechnical Engineering: Optimum Moisture Content for Compaction of Touchet Bed Soil from Touchet, WA.

Mike Espinoza, Bryce Hanson, Garrett Hendrick, Mitchell Urlacher

Richard Orndorff, Geology

The soil tested for Optimum Moisture Content for Compaction was retrieved from Touchet, WA. A particle size distribution curve constructed from sieve analysis of the Touchet Bed soil was comprised of 55% sand, and 45% fines passing through the #200 sieve. Before compaction, a specific gravity test was performed on the soil, revealing a specific gravity of 2.5. The soil sample was retrieved from Southeastern Washington, residing in the Touchet Valley. The formation in which the sample was taken was a result of various glacial outburst floods that was restricted by the narrow Wallulah Gap resulting in a temporary lake. Temporary Lake Lewis backed up the Yakima, Walla Walla, Touchet, and Tucannon River valleys. As water stabilized and calmed, sediment carried by the glacial outburst settled out of suspension and deposited along the valley floor, resulting in the Touchet Formation. Presented, are results for moisture content and compaction of soil according to ASTM standard D698. Prior to construction, compaction tests are carried out on soil to increase unit weight and shear strength, increasing resistance to settling and structural damage.

Intracultural Bullying: Mexican Americans Bullying Mexican Immigrants

Sandra Espinoza Montes

Katherine Colles, Psychology

A growing body of research has examined acculturation conflicts among the fastest growing ethnic group, Latinx youth, in the United States (Lorenzo-Blanco, Oshri, Unger, Baezconde-Garbanati, & Soto, 2016). Research has reported acculturation conflicts in the form of bullying between Mexican Americans and Mexican immigrants. For instance, language skills and a sense of superiority are two key components that drive Mexican Americans to bully Mexican immigrants due to their lack of the English language and citizenship status (Berry, 2005; Mendez, Bauman, & Guillory, 2012). Although educational interventions for bullying are increasing, interventions for intracultural bullying between

Mexican Americans and Mexican immigrants are often neglected (Merrell, Gueldner, Ross, & Isava, 2008). Overall, this paper seeks to bring awareness of this cultural conflict and formulate a solution.

The Influence of Feedback on Predicting Memory

Jennalyn Estrellado, Katherine Thomas

Danielle Sitzman, Psychology

Research in metamemory suggests that a person's ability to accurately differentiate between what they do and do not know will influence their future behaviors. People will stop studying information they have deemed well-learned and continue to study information they feel is not well-learned. However, this choice of continuing or discontinuing study is only beneficial if their initial memory assessment is accurate. Thus, it is important to understand factors that may influence a person's ability to accurately predict what they do and do not know. Feedback is crucial for correcting errors in memory; however, less is known about how feedback influences people's perception of their memory performance. That is, following feedback, can participants accurately distinguish between what they will and will not correctly recall on an upcoming test? In the current experiments, participants studied 30 definitions taken from GRE study materials. On an initial test, participants were shown the definition and asked to provide the word they studied with that definition. On half of the items, participants received feedback in the form of the correct response, but were not provided feedback on the remaining items. Finally, participants were asked to predict the likelihood that they would answer this same question correctly on a later test. On the final test, participants were again provided a definition and asked to recall the correct word. Similar to previous work, it is anticipated that participants' predictions of final test performance will not accurately reflect the improvement in memory due to feedback.

Facts & Alternative Facts: Exploring Depictions of Cancer in Frank McCourt's Limerick

Dylon Evanson, Freddy Lopez, Matt Jeffs

Frank Houghton, Master of Public Health

Background: Frank McCourt's best-selling memoir of life in Limerick during the 1930s and 1940s depicted a pathogenic environment with few redeeming features. Heavily influenced by his father's 'outside' perspective. McCourt paints a picture not only of a desperately 'sick city', but of a city significantly more harmful to health than other contemporary cities. His negative portrayal of slum life in Limerick has been hotly contested by residents of the City. Other more positive accounts of Limerick have since emerged and McCourt's work has been critiqued for supposed inaccuracies. Aim: This research aimed to explore the veracity of Frank McCourt's depiction of life and death in Limerick City from 1935 to 1949 through an examination of contextual evidence. This research focused specifically on Cancer. Method: Secondary analysis of archival data based on vital statistics mortality data from Ireland's Annual Reports of the Registrar-General from 1935-1949 were examined. Results: This study compared Cancer related mortality in Limerick County Borough and the City of Dublin. Cancer related mortality was similar in these cities during the years 1935 to 1949. The graph below depicts the death rates between Limerick and Dublin. Limerick certainly had higher death rates than Dublin during the late 30's and mid 40's. Discussion & Conclusion: This analysis demonstrates the cancer death rates were broadly similar between Dublin and Limerick in the years 1935-1949. It is important to note that at this point in time lung cancer was not differentiated from cancer generally and this may have influenced the results.

Analyzing Local Basalts Using Portable XRF on Fresh and Weathered Surfaces

Lucas Evert

Chad Pritchard, Geology

Quantitative analyses of local basalt samples are possible using a calibration made for the EWU Geology portable XRF. However, the difference of measurements between weathered or fresh rock surfaces is not well constrained in the EWU lab or the literature. For this study the samples used for the basalt calibration were re-run with a focus on polished and

fresh surfaces versus weathered and rough surfaces of the same samples. Results show that flat surfaces have overall similar results for most major and trace elements. Rough surfaces generally have reduced concentrations of elements, with the exception of Na (K-orbital). The Bruker Tracer III PXRF measures from < 1 to > 10 mm depth in the sample depending on the KeV (photon excitement due to fluorescence) energy of the element and orbital observed, so if the sample is not flush with the analyzer elements observed in the lower KeV range may not be accurate. Rough surfaces do not consistently touch the platform, resulting in decreased concentrations for many elements. From this study it is apparent that cutting the sample is preferable for accurate measurements, and measurements in the field should focus on flat surface with minimal void space or vesicles.

The Elemental Composition and Comparison of Lipstick Samples Analyzed by X-Ray Fluorescence

Crystal Everett

Peter Bilous, Chemistry & Biochemistry

The analysis of trace evidence collected from crime scenes has been used by forensic scientists to solve crimes for over a century. Trace evidence refers to small quantities of material that is transferred to a crime scene and includes material such as hairs, fibers, paint, glass, soil, explosives & firearm residues, lubricants, and cosmetics. X-Ray Fluorescence (XRF) analysis is a quick, inexpensive, and portable technique that can be used to identify the individual elements that make up a trace evidence sample. An XRF instrument measures the energy of secondary x-rays emitted by each element in a sample after an initial excitation using a primary x-ray source. XRF analysis is used in the field of geology to identify the elemental composition of soils, and can be used for the forensic analysis of trace evidence, such as cosmetics. In this project, a Tracer III portable X-Ray Fluorescence machine manufactured by Brüker was used to compare the elemental composition of several different brands of lipstick which appeared similar to each other based on their color. Lipstick colors are imparted by pigments which may be inorganic compounds composed of different elements, or larger organic molecules. Our study showed that XRF analysis is a rapid and effective way to distinguish similar looking lipstick samples. Every brand of lipstick that was analyzed had a unique elemental composition.

Finding Profession in Passion: Achieving Educational Goals through Service Learning

Joseph Figg

Teena Carnegie, English

Service learning pedagogies engage students in activities that allow them to think cognitively about contributions to their community while achieving course learning objectives. Service learning's benefits stem from experiential education, which frames service learning as opportunities for students to apply their knowledge within community contexts (Furco, 2001) for increasing community engagement (Higgins, 2009). In service learning, students draw upon what they have learned in the classroom, apply it to their experiences outside the classroom, and reinforce learning through a process of reflection (Eyler & Giles, 1999). Service learning opportunities allow students to apply our knowledge within a community context, both for community engagement and educational benefits. Projects we have worked on include proposal writing for The Guilds' School Spokane, the Refworks informational campaign for EWU Libraries, iFixit instructional manuals to reduce e-waste, and designing CPTSC conference programs. These contributions to local and national non-profits allowed us to develop invaluable real world experience, while having positive impacts on the communities we live in. This poster presentation will demonstrate the impact we can have on our community when we apply our professional and educational experience toward causes we genuinely care about. Not only does this process solidify the foundations of our education, but it allows us to develop a sense of worth in our community. Service learning gives purpose and meaning to our learning objectives in a way that positively impacts us as individuals, and our community at large.

Definition of AI through Turing Test

Matthew Firmin

Atsushi Inoue, Computer Science

In the modern era, AI is everywhere. From sci-fi to online programs simulating a conversation, people are always trying to find some new form of AI, but they never think about what an AI actually is. Most people don't realize that there is no universally agreed upon definition of an AI, instead most people have their own definition of what can qualify as AI. The Turing Test was one of the first ways to lead us to a more solid definition. To show more about an AI, we made a skit that was a conversation between a human and an AI, and had anonymous people answer a survey in which they judged whether they felt the conversation was natural or not, and asked them to try and figure out which one was the AI. After dealing with the ELIZA AI and reviewing the results from the survey, my own definition changed.

Medical Lake: Diving into the Geology

Alyssa Fitzgerald

Chad Pritchard, Geology

Medical Lake sits on a basalt and granite contact and was likely excavated by the Missoula Floods, thus containing a good representation of regional geology in one beautiful location. We analyzed a basalt sample from the cliffs along southern Medical Lake using a Bruker Tracer III portable XRF and compared the results with other local basalts. The rocks making up the Medical Lake cliffs are the Miocene Priest Rapids Member of the Wanapum Basalts. Granite on the west side of Medical Lake is approximately 49 Ma based on U-Pb zircon ages. We hypothesize that the Missoula Floods preferentially eroded the basalt granite contact creating the depression that was later filled by water to form Medical Lake. The bathymetry map of Medical Lake shows that the water is the deepest at the base of the cliffs, which may have happened because the floods preferentially eroded the broken-up rocks. The cliffs are probably fractured because they are in the Cheney fracture zone which made it easier for the turbulent waters to erode them. So, the cliffs were probably akin to a small waterfall at some point in time. Medical Lake never ceases to amaze!

Glycosylation of CD68 during Osteoclastogenesis

Amber Framstad

Jason Ashley, Biology

Glycosylation is a process by which enzymes attach sugar molecules to amino acids in proteins. Its effect on protein function is poorly understood. Osteoclasts are multinuclear bone resorbing cells of the macrophage lineage. Formed by fusion of mononuclear precursors, their role is crucial to bone maintenance, remodeling, and repair. CD68 is a membrane protein expressed by both osteoclasts and macrophages. CD68 glycosylation is known to vary during osteoclast maturation. The goal of this study is to determine whether the glycosyltransferase, ST3Gal1 is responsible for CD68 glycosylation and how its glycosylation effects osteoclastogenesis. To see how ST3Gal1 alters CD68 glycosylation we will knockdown its expression with RNAi in an immortal pre-osteoclast cell line, RAW264.7, which will be confirmed by qRT-PCR and western immunoblotting. Precursor cells will then be differentiated into osteoclasts and the number and size of resultant osteoclasts, and the degree of glycosylation of CD68 compared to controls will be determined. This data will be fundamental for understanding the role of glycosylation in osteoclastogenesis.

It's More Than Just Cookies

Alecia Franklin

Teena Carnegie, English

When approached correctly, service-learning is more beneficial to students than a standard lecture-only style pedagogy. Not only is it beneficial to the students participating, but it also benefits the community. In fact, a recent survey of service-learning students at the University of Washington revealed that 94% would recommend service-learning to others. By

working with community partners, students are able to enhance their awareness of their community and its needs. Service-learning offers the experience of not only engaging with the community, but also by offering experiences that can develop into professional skills. This presentation will illustrate how my experience working with the local Girl Scout council as a service-learning intern enabled me to develop skills and relationships that I can apply to a number of potential careers. During my internship, I managed the local Girl Scouts' social media accounts. While doing this, I learned how to use different types of posts to convey different messages, as well as how different platforms may need different formats or content. Building a strong relationship with a local partner and gaining professional knowledge was an incredibly valuable experience that gave me insight into the non-profit world and the professional world I will join.

18 Year Old Collegiate Football Player With A Labral Tear

Sarah Gaston, Martin Waldrip, Andrew Cheney

John Parry Gerber, Physical Education, Health & Recreation

Shoulder dislocations can lead to Labral tears but not necessarily ones that are almost 260° of the labrum. The athlete in this case study is a 19-year-old male football player. He first dislocated his shoulder at his state track meet his senior year of high school a couple months before he dislocated it again during practice. The dislocation did not really bugging him the first dislocation, but upon the second one, his shoulder felt "empty". An MRI showed that he had torn almost two-thirds of his labrum. We started rehabbing the shoulder in preparation of the surgery and has since been doing post-op stretching and rehabilitation. The purpose of the case report is to describe the anatomy of the shoulder dislocation and labrum in the shoulder and the signs and symptoms pertaining to this injury. Also, the surgical procedure and rehabilitation used will be discussed. Providing a case report on this condition will assist athletic trainers become more knowledgeable and aware of an injury they probably will encounter in their profession.

Assessment of Metabolic Disorders and Genetic Diversity in Conjunction with Species Endangerment Policies of Washington State Grey Wolves (*Canis Lupus*)

Hannah Gibson

Randall James,

Focusing on the genetic diversity of *Canis Lupus* from the Northwestern region of the United States. Recent bottlenecks and population isolations have made an impact on the overall genetic diversity. Human interaction and forced isolations are a major factor in the restrictions wolves have faced throughout the years and as a result were added to the endangered species list. Our hypothesis suggests that current wolves located in the Washington region have little genetic diversity and are more susceptible to metabolic diseases. This is being analyzed on a small level as large scale sampling would be inconclusive due to large amounts of latent diversity in the population as a whole. Mutations in mitochondrial loci cytochrome b and ATP 6 were analyzed to find polymorphisms utilizing optimized protocols involving DNA extraction from hair, loci specific primers, PCR, and DNA sequencing. The results of no polymorphisms determined that *Canis Lupus* still requires monitoring as they are now more susceptible to metabolic diseases despite the original rule that only 18 breeding pairs were needed for a complete recovery and potential delisting.

The Removal of Elwha and Glines Canyon Dams: A Story of River Restoration

Bernt Goodson, Austin Armstrong

Richard Orndorff, Geology

The Elwha River lies on the Olympic Peninsula and flows through Olympic National Park and into the Strait of Juan de Fuca. It is estimated that this river once supported salmon runs of more than 400,000, including all six Pacific salmon species (Duda et. al. 2011). However, in 1913 these runs were completely cut-off 5 miles from the mouth of the river by construction of Elwha Dam (NPS 1988). Elwha Dam was a 108-foot-tall, 450-foot-wide concrete, gravity dam that provided electricity for the Olympic Peninsula and Bremerton Navy Base (NPS 1988). Construction took place between

1911 and 1914, and for over a decade it was the sole provider of electricity for the Peninsula (NPS 1988). In 1927, a second gravity dam, the 210-foot-tall Glines Canyon Dam, was built upriver in the National Park (NPS 1988). Both dams remained in operation through the 20th century, but were purchased by the Department of the Interior in 1992, with the purpose of removing them to restore salmon runs. Demolition began in September 2011 and was completed in August 2014 (NPS 1988). The removals were the largest undamming project in US history (Duda et. al 2011) and offered unique research opportunities in river restoration. Elwha river restoration is still in its infancy and largely dictated by the rivers natural processes. It is estimated that it will take a generation for the river to regain equilibrium and twenty years before salmon runs return to the upper stretches of the Elwha (Duda et. al. 2011).

Preliminary Structural Interpretation of the Willow Lake Aureole

Bernt Goodson

Chad Pritchard, Geology

The Willow Lake aureole is found in Proterozoic calc-silicates of the upper Piegan Group of the Belt Super group formed by Cretaceous to Eocene granites with amphibolite coronas. Bedding and foliation dip to the east at 30 to 90 degrees, likely directly related to intrusion the granite plutons and resulting in at least 500 meters of uplift. The Piegan group in this area is generally green limestone, mudstone and quartzite. Soft sediment deformation prior to lithification can be difficult to distinguish from post-depositional deformation and metamorphism. Based upon plagioclase – amphibole geobarometry the whole area has been uplifted on the order of 7 km in the last 49 Ma. Zircon cores in the granite preserve Proterozoic ages suggesting that the granite is a partial melt of the crust and has been cross-cut by mafic dikes during cooling. Age determination of the intrusions and proximal juxtaposition of Deer Trail and Belt Supergroup corresponds to the late stages of the Sevier Orogeny and Priest River Complex, correlating with lower crustal thickening and upper crustal extension within the hinterland.

The Impact of Marital Status and Children on Woman's Adjustment to Incarceration

Rachel Graham, Autumn Sule

Kayleen Islam-Zwart, Psychology

Maternal incarceration rates have increased dramatically (Foster, 2012). Incarcerated mothers report distress related to separation from their children, which has been associated with poor health. Casey-Acevedo, Bakken, and Karle (2004) found child's visits increased disciplinary infractions among incarcerated mothers. Specific to males, married inmates were better adjusted than unmarried inmates (Payne, Howell, & Roe, 1971). This study examined how marital status and children impact adjustment to incarceration. It was expected that married women would show better adjustment than unmarried women. It was anticipated that women with children would show more adjustment problems than those without. It was unclear what would result from the interaction. Eighty-one women incarcerated at a prison in the Northwest US. Mean age was 31.02 years (SD = 8.44); 23 women were married and 58 were not. A total of 13 women reported having no children and 68 reported having children. Women completed the Prison Adjustment Questionnaire (PAQ: Wright, 1986) and a clinical interview. A 2 (children vs. no children) x 2 (married vs. not) analysis of covariance controlling for length of time in prison revealed a significant interaction for presence of children and marital status for internal adjustment, $F(1, 71) = 4.12, p = .046, \eta^2 = .055$, but not for external, $F(1, 71) = 0.69, p = .794$, or physical adjustment, $F(1, 71) = 0.33, p = .566$. Specially, female offenders reporting being married without children indicated significantly better internal prison adjustment than women married with children and women not married with children.

Annotation of the *Drosophila ficusphila* 3L chromosome Contig11 as part of the Genomics Education Partnership

Rachel Gulden

Luis Matos, Biology

Contig11, a 45,000 base pair segment of the 3L chromosome in *Drosophila ficusphila* was annotated using various bioinformatics tools including the UCSC Genome Browser, the Basic Local Alignment Search Tool (BLAST), GENSCAN gene predictor tool, RNA-Seq data and FlyBase genome research tools. Using *D. melanogaster* as a reference genome, two full genes (jim, CG14448), and one exon of a third gene (SPoCk) were annotated; additionally, a pseudogene was identified. The annotated genes, jim and CG14448, contained the same number of isoforms in *D. ficusphila* and *D. melanogaster*. The single exon of the SPoCk gene was located at the end of this contig, with the remainder of the gene occurring in an adjacent overlapping contig. Additional investigation of the jim gene phylogenetics were explored using Clustal Omega and FlyBase data. The structure and function was explored using Jpred and PHYRE2 protein model prediction tools. The jim protein product is a Cys2His2 class zinc finger protein that is involved in dendrite morphogenesis in early development and chromatin silencing during the adult stage of the flies. The jim gene sequence, structure and function are highly conserved within the genus *Drosophila*, likely the jim protein product has essential function in regulation of gene expression during early development.

Life History Flexibility May Allow Colonization of Diverse Habitats by *Culaea Inconstans*

Samuel Gunselman

Paul Spruell, Biology

The invasive fish brook stickleback (BSB, *Culaea inconstans*) was first detected in eastern Washington in 1999. They have subsequently expanded their range into water bodies of variable habitat stability. Successful colonization by an invasive species is often influenced by flexibility in life-history traits. One such trait that may be especially important in determining the success of introduced species is the number and timing of reproductive events. These factors can be driven by the stability of spawning habitat and prey availability. I hypothesized that BSB living in unstable habitats may be functionally semelparous (individuals die after a single spawning event or single spawning season), due to unpredictable habitat conditions. Brook stickleback spawn in the spring and reach sexual maturity in one year. Therefore functionally semelparous populations should be, on average, younger than age class I (i.e. a fish that has overwintered once). I collected BSB from 19 water bodies and extracted otoliths (bones of the inner ear that accumulate annual growth rings) to determine age. The average age of BSB collected in stable habitats was significantly higher than the average age of BSB collected in unstable habitats (unstable = 0.76, CI 0.68 – 0.83; stable = 1.24, 95% CI 1.14 – 1.34; $p < 0.0001$). The average proportion of BSB age class 0+ and I was significantly higher in unstable habitats than stable habitats (unstable = 0.90, stable = 0.68, $p < 0.01$). These data suggest that BSB in unstable habitats are functionally semelparous.

Faulted Buttes of the Medical Lake Area

Elijah Hansen, Kyle Duckett

Chad Pritchard, Geology

The buttes of the Medical Lake area preserve some of the most complex geologic activity that formed the northwest US. Specifically, Needham, Riddle, and Olsen Hill are made up Mesoproterozoic Belt Supergroup and the buttes to the West, such as Fancher Butte and Booth Hill, contain rocks of Neoproterozoic and possibly Cambrian rocks that were likely thrust over the Belt Super group. This poses an issue as reverse faults are not typically associated with younger rocks being heaved over older rocks. The fault is not well preserved due to the presence of an Eocene granite exposed in Medical Lake as well as portions of Olsen, Riddle, and Needham Hills. Subsequent Miocene Columbia River Basalt flows also cover lower areas and obscure older rocks. There are also potentially younger normal faults that have dissected the

area, as well as the western Cheney Fracture Zone. General mapping and attempts of geochemical correlation are presented to support the importance of the buttes of the Medical Lake area in the geologic paradigm.

Unconfined Compressive Strength of Touchet Soil

Elijah Hansen, Max Barnett, Andrew McLeod, Tome Kissack

Richard Orndorff, Geology

Soil strength is the result of the cohesion and friction between individual soil particles. A soil's strength can be determined by applying an increasing force until failure at measured moisture contents. We tested Touchet bed soil from south east of the Tri Cities area to failure at three moisture levels to determine the ultimate strength of the soil at its optimal water content. Compacting the soil increases the grain-to-grain contacts and the addition of moisture aids in the compaction of soil particles, thus increasing the strength of the soil. We determined the normal and shear stresses at failure in the unconfined compression test according to ASTM D2166.

Are the Rich Getting Richer and the Poor Poorer?

Allison Harvey

David Bunting, Economics

Questions concerning income distribution and economic inequality usually generate passionate and opinionated responses. Research by Piketty, Saez and others have found that over the past fifty years wealth and income concentration has increased leading to the popular conclusion that increasing inequality is a sign of middle class decline and predictor of depressed economic growth. However, the effects of increased income concentration on measures of income inequality over time are less well-known. Is income inequality accelerating? How does inequality in the United States compare to that in other countries? In this study, I calculate annual Gini coefficients to determine how income inequality has changed over a wide range of years for the United States, Canada, United Kingdom, and Australia using household survey data and official tax revenues. Measuring inequality with tax data should eliminate some inconsistencies inherent with self-reported survey data. I expect to find how income inequality has changed over time for some leading industrialized countries. Popular attention has been focused on the income growth of the rich, but the relative effect of this growth on the poor as measured by Gini coefficients has been ignored. Basically a large increase in the income share of the rich does not directly translate into a large increase in the Gini coefficient. Instead income concentration can increase but income inequality only slightly change.

Case Study of a 21-Year-Old Male Division I Male Basketball Player with a Scaphoid Fracture

Lindsay Hayes, Kristin Freitas

Parry Gerber, Physical Education, Health & Recreation

A scaphoid injury is typically uncommon, but a rare injury to keep an eye out for. The topic of a scaphoid fracture that is heavily debated is whether a surgical or nonsurgical route would be the best investment for recovery. In this case study, we will be looking at the comparisons of previous studies of nonsurgical and surgical routes, and comparing those to the decision made for a 21-year-old Division I collegiate male basketball player. There are several ways to approach a scaphoid injury, and in this incidence, a scaphoid fracture. This specific athlete was given the approach of a surgical fixation. In the summer of 2016, the patient had fallen on an outstretched hand, fracturing the scaphoid in his right hand. This injury in particular is necessary to make quick medical decisions, as loss of blood supply to the scaphoid could lead to avascular necrosis, which can cause for the bone to potentially die and collapse, along with loss of function of the joint (Badahir, C; et al). Upon receiving information that surgery would be likely the best option, the surgical intervention was underway in preparation for the upcoming basketball season.

Pyridine-N-oxide Ligand Variation Effects on the Structure and Magnetism of Quasi-two-dimensional Antiferromagnets

Hannah Hefely

Jamie Manson, Chemistry & Biochemistry

Cu(II) ion based quasi-two-dimensional antiferromagnets are of high research interest worldwide, powered by the observation that such systems demonstrate superconductivity at finite temperatures. Although this link between magnetism and superconductivity is not well understood, we are exploring similar polymers based on molecular structure to gain insight into this relationship. Previous work focused on implementing pyridine-N-oxide ligands (pyO) and examining the subsequent deviations made to the structural and magnetic properties from the prototypical Cu(pyrazine)₂(ClO₄)₂. Detailed studies of [Cu(pyO)₂(pyrazine)₂](ClO₄)₂ and [Cu(4-phenyl-pyO)₂(pyrazine)₂](ClO₄)₂ found that interlayer spacing increased as expected, while the magnetic ordering temperature remained mostly constant. This unexpected result calls for further examination of the structural and magnetic properties of this family of polymers. My research consists of synthesizing structures of new pyridine-N-oxide ligand variations to better understand the relationship between ligand substitution and size, interlayer spacing, and the overall effect on the structural and magnetic properties of these 2D quantum antiferromagnets.

Hangman Creek Watershed Proposal

Amy Hilland, Martee Snyder

Alex Mann, Urban & Regional Planning

Hangman Creek, also known as Latah Creek, covers 689 square miles and stretches from the foothills of the Rocky Mountains, across the Palouse region, to the Spokane River and the Spokane-Rathdrum Aquifer, our primary source of clean drinking water. For the past two decades, Hangman Creek and several of its tributaries have been listed by the Washington State Department of Ecology as "impaired water bodies" for falling below state water quality standards. The main causes for poor water quality are agriculture, urban development, timber removal, channel alterations, floodplain disturbances, erosion and loss of riparian zones. By examining a sub-watershed of Hangman Creek, graduate students from Eastern Washington University's Urban Planning Program have created a proposal for future plans that would support a sustainable future for the Hangman Creek Watershed and its ecosystems. The proposal includes a description of the watershed, a comprehensive stakeholder summary, inventory and analysis that address human and environment-centered concerns, and an assessment of the watershed's strengths, weaknesses, opportunities, and threats.

An Analysis of the Benthic Macroinvertebrate Community in Lake Roosevelt, WA and its Impact on Recruitment in First-Feeding White Sturgeon (*Acipenser transmontanus*)

Sarah Hindle

Camille McNeely, Biology

The white sturgeon (*Acipenser transmontanus*) is the largest, longest-lived freshwater fish in North America. Many landlocked populations of this historically anadromous fish have experienced decline in recent decades due to high mortality at the onset of exogenous feeding, which leads to poor larval recruitment. The population in the Columbia River's Lake Roosevelt reservoir has experienced chronic recruitment failure since the 1960s, likely due to larval starvation. This study focuses on white sturgeon in the Upper Columbia and their primary food source: benthic macroinvertebrates (BMIs). Our objectives are to characterize annual and seasonal changes in BMI density and diversity in the reservoir, and to compare abundances of BMI taxa in the benthos to those in sturgeon stomachs to determine if starvation is contributing to recruitment failure. Annual variation will be explored by analyzing benthic sled samples from 7-10 years ago, which were collected in the month of July in the riverine portion of Lake Roosevelt, where white sturgeon are known to spawn during mid-summer. Preliminary analysis of benthic sled samples from 2007-2010 showed a substantial variation between years, with 2007 demonstrating more than twice the mean BMI density of any other year

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(2007 =479.1 BMIs/m², 2008-2010=190.7, 159.9, and 117.8 BMIs/m², respectively). We also saw a trend towards higher BMI density in the littoral zone (mean=396.8/m²) as opposed to the thalweg (mean=147.7/m²). However, we found minimal differences in diversity regardless of zone or time.

Hydrogen/Deuterium Isotope Fractionization in Water

Keylin Huddleston, Bernt Goodson, Calen Busch, Kyle Duckett

Anthony Masiello, Chemistry, Biochemistry

Isotopes, atoms of the same element but with differing numbers of electrons, can serve as tracers in a variety of hydrogeological processes. The abundance of naturally occurring isotopes can change during a hydrogeological process and give indications of the mechanisms responsible for streamflow generation as well as characterization of the flowpath that water follows before discharge. Variations in isotopic concentration of hydrogen and deuterium can be found in meteoric waters based on temperature of condensation and distance from water vapor source. Historically, isotopic analysis of groundwater has been performed using mass spectrometry. This study explores whether Fourier-Transform infrared spectroscopy utilizing a long path gas cell has the detection limits to replace mass spectrometry for isotope fractionation investigations. The overall goal of these studies will be to use this instrumentation on connate water obtained from local natural spring water.

Comparison of Dam Rocks Along the Spokane River

Keylin Huddleston

Chad Pritchard, Geology

The goal of this study is to compare two granite samples obtained from hydroelectric dams along the Spokane River located in Lincoln County Washington. The granitoids at Long Lake and Little Falls are mapped as Eocene and Cretaceous. Results from this study support both Eocene and Cretaceous age granitoids are present at both locations. Cretaceous granites have been associated to the Cordilleran magmatism and Eocene granitoids were likely associated with a late-Sevier uplift. Observations using a petrographic light microscope conclude the Long Lake sample underwent extensive chlorite alterations and the Little Falls sample has preserved amphibole and biotite grains in abundance. Mineral abundance of quartz, alkali feldspar, and plagioclase was graphed on a QAP ternary diagram to further classify the granitoids as monzogranites. Feldspar data plotted onto an orthoclase, albite, and anorthite ternary diagram indicate andesine (Little Falls) and labradorite (Long Lake) as common feldspars minerals. Temperatures of the granitoids have been estimated using two-feldspar (590 and 670 °C) and hornblende-plagioclase (770°C and 3kBar for Little Falls). Multiple types of analysis have been used to compare the different Cretaceous granitoids and these rocks that preserve a great deal of the pre-Neogene history of the area.

CBR Testing of Touchet Bed Soils; Touchet, WA

Keylin Huddleston

Richard Orndorff, Geology

We present results for the California Bearing Ratio (CBR) of the Touchet bed soil according to ASTM standard D1883. The CBR test determines the penetration resistance of compacted soil for road and runway applications. Results indicate the soil's suitability as a base, subbase, or sub-grade beneath both flexible asphalt concretes and rigid Portland cement concretes. The particle sized distribution of the Touchet bed soil classifies it as a ML (low liquid limit silt) under the United Soils Classification Scheme (USCS). The Touchet Formation was deposited in southern Washington as Pleistocene Lake Lewis filled and drained dozens of times due to the backing up of glacial outburst floodwaters at the Wallula Gap in the Horse Heaven Hills. The soil was compacted to varying degrees at its optimal water content and placed under a load frame to determine its penetration resistance. Even under super optimal compaction the CBR values were less than 2%, verifying the soil as not suitable for even the lowest subgrade of road building materials.

Factors Influencing Roost-Site Selection In Overwintering Cavity-nesting Birds In Eastern Washington

Shelby Hunter

Margaret O'Connell, Biology

Primary cavity-nesting birds (CNB) are considered keystone species because they annually excavate cavities in trees that subsequently become critical habitat for other vertebrate species. In Eastern Washington most CNB (e.g. woodpeckers, nuthatches, and chickadees) are year-round residents. To increase overwinter survival CNB roost in tree cavities and form flocks. Birds in flocks use alarm calls to warn of possible threats and contact calls to promote group cohesion. My study examines how vocalizations influence the selection of roosting cavities and how this varies with temperature. The study is being conducted during 2 winters on Turnbull National Wildlife Refuge. Thirty-six sampling stations with roost boxes are divided between 3 forest units. At each station I perform an 8-minute point count during which I record all birds heard and seen. Following the initial point count I conduct a second point count with 1 of 3 treatments: 1) no broadcast call 2) alarm broadcast call and 3) contact broadcast call. During the 2016-17 winter I recorded 516 observations of 8 species. Although there were no overall differences in either number of birds or number of species between treatments, the number of Pygmy Nuthatches increased following the contact call treatment.

Using Failure to Succeed

Bryan James

Teena Carnegie, English

Sometimes when working on a service-learning project things just don't work out. My project was to write a grant for a local charity, and in the end it didn't get funded. Most would consider it a failure, being that its entire purpose is to get money, but I wouldn't see it that way. My success is seen in the skills and knowledge that I gained from working with real-world professionals that has given me the confidence I needed to continue my schooling. Service-learning provides a unique experience for students where they are able to learn from their mistakes while in a classroom setting, and even when presented with failure, we are able to learn from it with help from instructors. My service-learning experience at Eastern Washington University gave me confidence in my own abilities by taking away that fear of failing: it wasn't the end of the world, and I'm still here creating more grants. In this poster, I will outline the benefits of service-learning regardless of whether it succeeds or not, the process of learning to face failure professionally, and how my experience with service-learning has helped me in my education.

Mosaic: Seeing the Bigger Picture

Elijah Johnson

Teena Carnegie, English

Communities throughout the USA and the world experience unemployment and homelessness as a social issue. According to the Bureau of Labor Statistics, Washington State has a higher-than-average rate of unemployment and homelessness. In Spokane, these rates are higher still. Homeless people often experience extra difficulties in finding and sustaining employment, such as higher rates of addiction, incarceration, and lack of health care, transportation, and marketable skills. This creates a problem for both the individuals and their communities. Homelessness and unemployment are large complex issues, and Mosaic Community Bike Shop is one organization which raises awareness, provides employment opportunities, job training and mentorship, as well as other resources for low-to-no income individuals to address these issues. In my service learning project, I worked as part of a team to write a grant proposal for Mosaic, a nonprofit organization in downtown Spokane that focuses specifically on serving the low-to-no income population and addressing the issues of homelessness and unemployment. Our project addressed needs at the organizational, individual, and community levels. My poster will focus on how our project benefited Mosaic, helped to address the issues of

homelessness and unemployment in the Spokane community, added to our skills and experience as students, and helped raise community awareness of these issues.

Emotional Avoidance Among Substance Users vs. Non-Users

Kristie Johnson Balbuena

Theresa Martin, Psychology

This study is interested in differences between substance users and substance non-users and their emotional avoidance scores. The study consists of 73 participants in total with most participants being between the ages of 20-24, Caucasian, and female. Participants complete a survey that was divided into three separate sections with locally developed questions, questions from the AUDIT, DAST-10, and Multidimensional Experimental Avoidance Test. The results showed a significant difference between substance users and non-users emotional avoidance scores; the higher scores were found among substance users. Non-using participants showed a significantly lower score for emotional avoidance. Together, these findings show high levels of emotional avoidance are abundant among substance users versus non-user.

Synthesis of Borohydride Compounds

Spencer Johnson

Eric Abbey, Biochemistry

The focus of this project is in the field of synthetic organic chemistry. We synthesized a variety of organic compounds called “metal organoborohydrides” (MRBH₃) which can be used as reducing agents, precursors to organoboranes, and have potential applications in hydrogen storage. The main reactions performed in this research involved the synthesis of borohydride compounds from trifluoroborate (MRBF₃) compounds using reaction conditions discovered in our lab. Prior to this project, organoborohydrides were limited to compounds with alkyl and aryl substrates, with only a handful of examples of heteroatom substitution. Therefore, one of the goals of this research is to synthesize borohydrides with a much greater variety of substrates than were previously available, such as alkenyl, alkynyl and heteroatom-containing substrates, expanding the diversity of this family of compounds. This would allow for synthesis of “tunable” reducing agents, or reducing agents with a variety of reducing strengths. Access to a broader family of these compounds will enable a fundamental study of the organic substituent on reducing strength.

Boron-Fluorine Ligand Synthesis

Cassidy Kammerer, Sonya Borgman

Ashley Lamm, Chemistry & Biochemistry

The luminescent properties of four coordinated boron compounds are useful in many applications, such as solar cells, laser dyes, and biological imaging. Therefore, a reliable method to make fluorescent boron containing compounds was investigated in this project. Five different nitrogen containing aryl groups were synthesized and used as ligands. These compounds were purified and the chemical purity was matched with the literature. Boron coordination was attempted with each of the ligands with limited success. The compounds were analyzed with the use of both boron and proton Nuclear Magnetic Resonance (NMR), which showed both the original ligand and a corresponding boron peak. This led to the conclusion that the four coordinate boron compound was synthesized. Fluorescence studies will be investigated in the future.

Trust in Political Media Sources: An Analysis of Political Opinion and Discussion Among Millennials

Savannah Kerbaugh, Michael Zorich, John Dunn, Melissa Wagner, Daniel Ivan Sanchez Garcia, Tabitha Black, Heidi Hillman

Heidi Hillman, Psychology

The question, do you trust your news source, has been studied in depth. However, there is little research on the topic regarding what media sources people trust and why. In our study we surveyed 151 college students and asked them their opinions about the media sources they trusted and why. Our results showed that 50% of our respondents trust alternative media sources (e.g., internet, podcasts) compared with 59% of our respondents reporting they sometimes trust mainstream sources (e.g., Fox, CNN). These results suggest that social media has grown as a reliable source for news and more Millennials are turning to the internet for their news.

Optimization of Amphipod (*Hyalella azteca*) Housing and Maintenance to Induce Reproductive Activity in Laboratory Conditions

Evan Knudson, Chantilly Higbee

Joanna Joyner-Matos, Biology

As a result of mining activity, lakes in the Coeur d'Alene (CDA) Basin (ID) contain cadmium, lead, and zinc; how the metals affect aquatic animals in the basin is poorly understood. Our goal is to determine whether small crustaceans, or amphipods (*Hyalella azteca*), can be indicators of water quality for mining-impacted lakes. The first step is to collect amphipods and maintain them in the laboratory for several generations. Collection techniques were optimized previously. In September we collected amphipods from four CDA Basin lakes and from an unimpacted lake. We maintained them in the lab for 58 days (those from metal-impacted lakes) and 71 days (unimpacted lake). Amphipod survival and reproduction were highest for those housed in 700 mL water with two food types and no aquatic plants. We next will test whether amphipods collected in spring have faster reproduction and whether those raised in metal-free water for several generations maintain their ability to tolerate metals. In preliminary tests, one generation in metal-free conditions did not alter amphipod metal tolerance.

Deciphering of Cretaceous and Eocene Granitoids in the Spokane Area

Kristine Larson

Chad Pritchard, Geology

Multiple phases of felsic to intermediate magmatism occurred in the Spokane area. The felsic intrusive rocks serve as an ideal way to measure and decipher the tectonic events that formed eastern Washington, which is similar to many other parts of the Cordilleran. This project focuses on the comparison of Cretaceous and Eocene granitoids, which may correlate with two major Cordilleran orogenies. A total of fifteen samples from the area were collected and compared based on whole-rock geochemical composition, radiogenic age determination, and mineral chemistries measured using a field emission electron microprobe. As a result of the whole rock data, these rock types have been classified as peraluminous granite to granodiorite. Liquidus temperatures ranged from 700 to 950 degrees Celsius. Trace element comparison was similar between ages, though Cretaceous granitoids did not show pronounced Eu-anomalies. Whole rock data did not generally provide a strong distinction between the Cretaceous and Eocene granitoids. However, based upon two-feldspar geothermometry it appears that Eocene granitoids had higher temperatures during plagioclase feldspar crystallization. We hope that further analyses will provide a more distinct difference between Cretaceous and Eocene magmatism as they have regional tectonic significance.

16 Year Old High School Student with Chronic Extensor Carpi Ulnaris Tendon Subluxation

Keira Lathrop, Erin Vandersypen

John Gerber, Physical Education, Health & Recreation

Extensor Carpi Ulnaris (ECU) tendinopathy is a common cause of ulnar side wrist pain. A chronic tendon subluxation is an uncommonly diagnosed cause of this pain (Patterson, Picconatto, Alexander, & Johnson, 2011). The subject of this case study is a 16 year old student who initially injured her wrist when moving furniture in October 2015. She was diagnosed with a wrist sprain, then a triangular fibrocartilage complex injury before being diagnosed with the ECU tendon subluxation. She underwent surgery in October 2016, was placed in a hard cast and a series of splints, then began working on rehabilitation to increase strength and flexibility. The purpose of this case study is to discuss the anatomy, signs and symptoms, surgery, and rehabilitation procedures for an ECU tendon subluxation. This will help medical professionals become more knowledgeable about the condition, how to diagnose it, and the treatment plan to be followed.

Major Depressive Disorder

Itaska Lee-Russey

Paul Lindoldt, Addiction Studies

Generally, the effects of Depression are not talked about. The significance of Depression on college campuses is often overlooked. Depression is also known as Major depressive disorder. Major Depression disorder is a disorder that affects one's feelings. People that have this disorders usually feel sad or have a loss of interests in activities. However, the effects of being depressed can influence one's daily interactions with work, school, social life and even their ability to parent. Individual's that suffer from depression commonly have: Negative thinking with inability to see positive solutions, Agitation, Restlessness, Inability to focus, lashing out at loved ones, Irritability, withdrawing from loved ones and regular activities, increase in sleeping, exhaustion and lethargy, morbid, suicidal thoughts and weight loss or gain. (Lieber, Arnold). Major Depression (Clinical depression as described from *webmd*).

Final Annotation Report of *Drosophila EUGRACILIS* Contig 33

Taylor Lewis

Luis Matos, Biology

As part of the Genomics Education Partnership, a variety of bioinformatics programs were used within this project to annotate contig33, a 34kb region in the *Drosophila eugracilis* genome. The *Drosophila melanogaster* genome was used as a reference for gene orthology and conservation relative to the orthologs found in the contig in question. Three genes were fully annotated in this project: the gw gene, the Slip1 gene, and the CG11360 gene. All three genes were similar to their *D. melanogaster* orthologs. Additionally, one of the genes was explored further, the gw gene. Its conserved domains were analyzed to determine potential functions of the gene and the homologous sequences were used to generate a Clustal MSA and phylogenetic tree. The Phyre2 and JPred4 web portals were also utilized to predict potential 3-D models, as well as analyze functions of the gene. The conserved domains predicted of the gw gene and the predictions from Phyre2 and JPred4 coincided with one another, determining functions of the gene, such as miRNA-mediated gene silencing, mRNA decay, translational control, and mRNA surveillance. In total, upon utilization of many different bioinformatics programs, three full genes were annotated in this project from contig33 of *D. eugracilis*, each of which showed great conservation and synteny with that of *D. melanogaster*. The structure of the gw gene that was analyzed further, as well as its function as a major component of miRNA-mediated gene silencing was also highly conserved.

Energy Dependence of X-ray Attenuation Coefficients

Caressa Leymao, Danielle Villa

Brian Houser, Physics

Medical x-ray imaging depends on the differences in attenuation coefficients of different tissue types. Mammography requires a clear distinction between tissues of similar densities, such as cancerous and healthy tissue. In this experiment, the contrast between similar tissues is shown and was found to be greater at lower x-ray energy. The attenuation coefficients of two tissue types were measured at peak x-ray tube voltages of 20kV and 30kV. The attenuation coefficients at 20kV were found to be $.389 \pm .014 \text{ mm}^{-1}$ and $.607 \pm .021 \text{ mm}^{-1}$ for fat and muscle respectively. At 30 kV, the attenuation coefficients were $.342 \pm .011 \text{ mm}^{-1}$ and $.501 \pm .012 \text{ mm}^{-1}$. The contrast between the fat and muscle at 20 kV were .560 and .467 at 30 kV. Therefore, fat is less attenuating than muscle and tissues are less attenuating at higher energies. The data supports that in x-ray imaging, the contrast between tissues is greater at lower energies.

Restoring Dignity Among Homeless and Low-Income Women

Alex Loomer

Teena Carnegie, English

Spokane community indicators specify that both Washington State and Spokane County averages for homelessness are higher than the average for the United States. Additionally, the Washington State Department of Commerce indicates that in Spokane, 9,670 individuals are unstably housed and 3,004 individuals are homeless. Seventy percent of individuals suffering from poverty are women and children. These women are left with virtually no resources to support themselves. Consequently, their health and well-being is dramatically decreased. Many non-profits work to address this social problem, but one of the most successful is Transitional Programs for Women. Transitions is committed to strengthening the community of homeless and low-income women in Spokane through five different programs to increase the potential for an improved quality of life. Through EWU's Technical Communication Grant Writing Course, I participated in a service-learning project that helped address the need of homeless and low-income women in Spokane. This poster will exemplify the benefits of service-learning projects and how my experience allowed me to provide meaningful community service while concurrently expanding my education in technical communication regarding research, writing, editing, revising, and designing effective documents.

Individual Differences in Correcting Memory Errors

Nikkol Macy

Danielle Sitzman, Psychology

The ability to update incorrect knowledge in memory is crucial, especially in educational settings. Research has demonstrated that providing corrective feedback following an incorrect response increases the likelihood a person will update their memory. However, less is known about individual differences in error correction. Correcting an error in memory requires a person to hold several key pieces of information in their mind at once (e.g., the question, the incorrect response, the feedback of the correct response). Thus, the current experiment sought to explore how working memory capacity may play a role in error correction. Participants studied 30 Lithuanian-English word pairs and on an initial test, were shown the Lithuanian word and asked to recall the English translation. For half of the items, participants were provided feedback in the form of the correct response, but were not provided feedback on the remaining items. Following the initial test, working memory capacity was assessed with Operation and Symmetry span tasks. All participants then completed a final test where they were once again shown the Lithuanian word and asked to provide the English translation. It is anticipated that participants will be more likely to correct memory errors following feedback compared to when feedback is not provided, but that participants with higher scores on working memory span tasks will correct a greater proportion of errors than those with lower scores.

Jesse Owens

Julio Maldonado

Chadron Hazelbaker, Physical Education, Health & Recreation

Hi my name is Julio. Today I will be presenting about a phenomenal track and field athlete. Jesse Owens was born on September 12, 1913, in Alabama. Owens was an African American, son of a sharecropper and grandson of a slave. Owens was one of the most phenomenal track-and-field athletes in Olympic history. He won multiple gold medals and set various Olympic world records.

Mutagenesis of Bordetella Type III Secretion System Effector A

Samantha Martinez, Maggie Pimentel, Karli Wilken, Riley Martin, Chazidy Norton

Suzanne Bassett,

Pertussis is a highly contagious human respiratory illness caused by the bacterial pathogen *Bordetella pertussis*. Members of the genus *Bordetella* produce a protein called *Bordetella* Type III Secretion System Effector A (BteA) that is known to be important in disease, as it is associated with rapidly killing a wide range of mammalian cells in culture. However, the exact mechanism of cell killing is presently unknown. Mutations were introduced into the *bteA* gene. The mutated gene was then introduced into a strain of *Bordetella* in which the *bteA* gene had been deleted. The *Bordetella* strains carrying the mutated *bteA* gene were used to infect mammalian cells in culture. The effect of the mutation on cytotoxicity was determined in cell culture. Pinpointing amino acids important in cytotoxicity may help to reveal the mechanism of action of BteA. An enhanced understanding may lead to more effective therapies and vaccines.

Sequencing the DNA of *Pseudomonas fluorescens* L5.1-96

Christa Mattocks

Ruth Kirkpatrick,

Pseudomonas fluorescens L5.1-96 is a bacterium important in defending the roots of common wheat (*Triticum aestivum*) from Take-all disease caused by the fungus *Gaeumannomyces graminis* var. *tritici*. As part of the ComGen project, the purpose of this research was to discover the unique genes behind the superior root colonizing, soil surviving, and drought tolerating characteristics of *P. fluorescens* L5.1-96. DNA was extracted from plasmids maintained in *E. coli* clones that comprise a genomic library of *P. fluorescens* L5.1-96. Extracted *P. fluorescens* L5.1-96 DNA was then prepared for sequencing, sequenced, and analyzed using the online software FinchTV and BLAST. Nucleotide sequence analysis results suggest code for a flagellar motor protein, a flagellar biosynthesis protein, a nucleotide sugar epimerase/dehydratase, and a transcriptional repressor protein.

Sword Fern Ontogeny

Christa Mattocks

Ruth Kirkpatrick,

The homosporous fern *Polystichum munitum* (Kaulf.) C. Presl is a common forest floor inhabitant throughout coniferous forests in the Pacific Northwest of North America and Canada. In collaboration with the Fern Watch Washington project, this study cultured Sword Fern gametophytes from field-collected spores. Optimum growing conditions for spore germination and gametophyte growth were investigated and gametophyte ontogeny was documented. Results suggest that optimum laboratory conditions for Sword Fern gametophyte culture is on mineral nutrient agar, in continuous full spectrum light, and at a temperature of 21°C to 25°C. The ontogeny of *P. munitum* gametophytes was documented in photographs and descriptions through five months of laboratory culture.

What is Leadership When it Comes to Crisis?

Meredith Mattocks

Charles Lopez, University College

What is leadership when it comes to Crisis? I have been a first responder for nine years. As such, I have always wondered what are the qualifications it takes for someone to become a leader in a crisis situation. Is it the person who knows the most or is it the person who seems to take charge? Many people get frustrated when they have a super that is brand new to the job. They don't understand why this person is higher than them with less qualification. Are there leadership qualities in them that others don't have? I would like to look at the qualifications that different leaders have for crisis situations. A doctor could be considered a leader and so could someone who uses common sense in an emergency situation. I will be looking at books and articles to get a sense of what is necessary and what makes others look to that one person. Is it something that starts during childhood in that persons peer groups? I will be looking at some of my own experiences and talking with others who have been through similar or different situations to get a sense of what made a certain person the leader in their situation.

Swiftboating Britain: The Rhetoric of Independence

Patrick McHugh

Patricia Chantrill, Communication Studies

This essay examines the Declaration of Independence from a critical perspective in order to identify the rhetorical devices employed by Thomas Jefferson. The author begins by discussing the history of attack advertisements in America as presently understood, looking at figures like Tony Schwartz and James Gillray, and provides some brief background on the historical context in which the Declaration of Independence was written. Then, utilizing the critical rhetorical theory of close textual analysis, the author highlights the specific strategies that Jefferson relies on in making his arguments against the British Crown, and their intended rhetorical impact. Of particular note within the document are the strategies of purposeful ambiguity, hyperbole, and scapegoating. The paper then compares the grievances of the Declaration of Independence to the language and rhetorical strategies used in the attack advertisements of the present, finding that many of them use the exact same structure and rhetorical tools to make their arguments. The author concludes that just as the more famous lines of the Declaration of Independence have had a lasting impact on American culture, so too have the grievances, contributing in this case to the negative political climate of the present.

Closing the Conversation Gap: Polarization at Eastern Washington University

Ariel Mcmillan

Julia Smith, Anthropology

This session analyzes whiteness constructs have a prominent role in the perspectives of the white students at EWU through mostly implicit bias. Not surprisingly as it is a predominantly white campus cradled in a highly homogeneous area. A survey was taken after racially charged events at Eastern Washington University responding to national news. The survey revealed a significant number of white students expressing "victim" mentality. To further understand how white students justify this sense of themselves and their position, interviews were necessary. The primary researcher, who is phenotypically of some non-Caucasian roots, asked a white student to do some interviews to observe if she would be more likely to receive honest answers from white students. Themes emerged such as resistance to efforts of diversification, the student's socialization, and a lack of non-white interactions. Affirmative Action as well as implicit biases to less overtly racist ideologies were discussed with participants. Most importantly the students answered queries about the sentiments of victimization of white students. This presentation should particularly benefit persons interested in racial constructs in higher education, sense of oppression by white students, survey and interview results, with insights into how to EWU can better construct multicultural education.

The ABC's of Organization: How Tasks Impact Time Estimation

Nicholas Mehrnoosh, Marie Gray, Elaine Appleby, Lisa Chudoba

Jonathan Anderson, Psychology

Time estimation is a vital component in the human ability to adapt to various environments and incorporates multiple regions of the brain. Generally, an individual will estimate the amount of time required to complete tasks in both their personal and professional lives based on past experiences and the perceived complexity of the current task. Previous literature has noted that time estimation can be influenced by task-oriented demands that can create a barrier to accurate time estimation by allocating central executive resources to the task and away from temporal information processing needed for time estimation accuracy. The purpose of the following study is to ascertain if individuals are aware that different task(s) can affect their ability to estimate time correctly. The study currently includes 46 undergraduate students from Eastern Washington University. Participants consisted of 9 males and 37 females with ages ranging from 18 to 53 years old. Using a mixed-model design, participants were timed while arranging alphabet blocks into a predetermined phrase ("Pack my box with five dozen liquor jugs"). Participants completed this task twice, first with the blocks arranged in alphabetical order (i.e. structured) and second with the blocks arranged in random order (i.e. unstructured task). Before each task, participants were asked to estimate their time to completion. Subsequently, half of the participants were primed with the average time to complete each task, while the other half were not. Ultimately, this research may give way to an understanding of the nuances of common time estimation practices.

The Phenomenology of Lived Experience with Traumatic Brain Injuries

Nicholas Mehrnoosh, Marie Gray

Jonathan Anderson, Psychology

Traumatic Brain Injury (TBI) is high among several subsets of populations across the world. Our study aimed, from a phenomenological perspective, to understand the lived experiences of an individual post-TBI. We developed an extensive 63-item short-answer questionnaire for TBI survivors on the Lime Survey platform. 240 respondents were recruited via email through a non-profit organization with the only requisite criteria being they were TBI survivors. Data was analyzed by coding responses for specific changes in lived experiences post-TBI. The findings highlighted five distinct areas of alteration that include cognitive, perceptual, emotional, behavioral, and a unique existential appreciation for life. Changes in these areas are correlated with a problematic identity crisis post-TBI, except the existential appreciation. The reported existentialism can be described as new modalities that facilitate a balance between crucial components post-TBI (i.e., acceptance and change). These modalities appear linked with reported positive outcomes post-TBI, in comparison with its absence where respondents report more adverse outcomes (i.e., depression, apathy, social isolation, and suicidal ideation). These findings have an incredible significance. While acceptance can be described as the "act of being," change can be described as the "act of doing." Practices such as cognitive-behavioral therapy (CBT) and existential therapy represent these components, yet separately. Thus, our findings provide supportive evidence that an integration of these practices could be a more effective approach to the rehabilitation of individual's post-TBI.

Family Dynamic, Mental Health, and Housing

Ghazal Meratnia

Frank Houghton, Addiction Studies

Spokane and the surrounding area are facing one of the most preventable yet burgeoning public health issue of the 21st century – homelessness. It should be noted that it is not inconceivable to eradicate such an issue as the Canadian city of Medicine Hat Alberta has done as such in 2015. The complications and implications of homelessness are well documented for single individuals, but family homelessness is not as well understood. Family homelessness was only recognized as recently as the 1980s. The Eastern World has a broader definition to what family is. From grandparents to cousins and all forms of familial relations in between, the definition is more all-encompassing. The Western World's

definition is more similar to that of the nuclear family, which is defined as having two parents and children almost exclusively. From the data collected, it is evident that homeless individuals, regardless of currently homeless or not, have a larger more encompassing definition of family – akin to the Eastern World’s definition. Overall health and mental health issues saw improvement due to housing. This could lead to policy change of Spokane government in that increase spending on housing homeless individuals could “reduces hospital visits, admissions and duration of hospital stays”. All participants mentioned increased spending time with family members while having a better environment to do so in. Rules that families abide by have not changed, regardless of housing. In fact, one participant stated bluntly “no, it has not”. All contributors reflected on their time without housing with.

Analysis of *Pisaster Ochraceus* Mitochondrial Metabolic Genes as a Clue to Susceptibility and Survival of Sea Star Wasting Disease

Matthew Mickey, Michael Kron, Ryan Leaming

Randall James,

Due to the increased mortality rates of sea stars on the western coast of the United States associated with Sea Star Wasting Disease (SSWD) which is caused by Sea Star associated Densovirus (SSaDv), this study was designed to find a potential link between durable mitochondrial DNA (mtDNA) mutations and an increased vulnerability to SSWD in *Pisaster ochraceus* along the Eastern Pacific Coast. Using DNA extraction, PCR and loci specific sequencing to areas known to affect energy production including ATP6, Cytochrome b, and Cytochrome Oxidase Subunit I, sea stars from various locations, including the Puget Sound were analyzed to assess the presence of Single Nucleotide Polymorphisms (SNPs) that may lead to decreased energy production in the organism. Shifts in energy production due to mtDNA mutations, coupled with increased water temperatures due to global warming may have consequences including increased vulnerability to SSWD and eventual death from the disease. By comparing sea star samples known to have the disease, and those known to be healthy, this study hopes to find a mitochondrial protein maladaptive SNP and link it to susceptibility to Sea Star Wasting Disease.

Analysis of the Mutations Directly Affecting Poison Resistance in the Sodium Potassium Pump of *Formica Obscuripes*

Ashleigh Miller, Matthew Dolan

Randall James,

There are a multitude of organisms that have adaptations that can alter the way they interact and survive within their ecosystem. Mutations lead to a type of adaptations that have a variety of effects on these organisms; one of these being poison resistance. Poisons, or toxins, have the potential to attack and destroy the organism’s neurological abilities. However, one of the ways that poison resistance is achieved is through an adaptive mutation in the organism’s sodium potassium pump. Poison Dart Frogs and Pufferfish have neurotoxins that attack the sodium potassium pump of organisms which effectively kills their prey or acts as a deterrent to themselves being prey; however, these predators have adaptive mutations that allow them to be unaffected by their own toxins. Ants are another group of organisms that use a cocktail of toxins including neurotoxins in order to survive their environment. For example, *Formica Obscuripes*, produce and use formic acid and an array of proteins, which can act as a very potent neurotoxin that attacks the Sodium Potassium channel. We propose that these ants have an adaptive mutation that allows them to be able to resist their own poison, similarly to the Poison Dart Frog and Pufferfish. To do this, we are sequencing the DNA of Formicinae ants’ sodium potassium channel to discover the different adaptive mutations that could potentially cause them to resist toxins.

Analysis of Regionally Collected Microbes for Novel Bioluminescent Pathways

Oliver Miller, David Song

Randall James,

Bioluminescent bacteria are a type of bacteria that emit light for a variety of biological purposes including defense against predators and warning signals. The lux operon is in charge of controlling bioluminescence levels, with luxA and luxB coding for bacterial luciferase, which is a type of enzyme that causes bioluminescence via oxidation of luciferin. While these bacteria are mainly found in seawater and are not common in the Spokane region, it is possible to find them farther inland due to wind currents and other modes of transportation. Bacteria were gathered from core samples taken around North Central High School, as well as from seawater and fish samples. The bacteria collected were grown on GVM and photobacterium bioluminescent selective agar plates. These samples were sequenced at the 27F-1492R locus, and NCBI BLAST was used to identify the bacteria in order to determine which ones contained bioluminescent bacteria that should be scrutinized for luxA and luxB. Doing this, a potentially novel bacterium that shares roughly ninety-eight percent of its 16s sequence with multiple other bacteria from the Vibrio genus was found. This bacterium will have its sequence examined and aligned with Clustal Omega to ensure its individuality from other members of the Vibrio genus. Following this, the bacteria's luxA and luxB genes will be sequenced and NCBI BLAST so that point differences in its lux genes can be analyzed.

An Investigation Of Substance Abuse And Addictions Among Latina/o Adolescents, And Family Coping Resolutions

Ereisa Morales

Joe Tedesco, Sociology & Justice Studies

The present study is an investigation of substance abuse and addictions among Latina/o adolescents and the effects among family and societal socialization processes. The purpose of the study is to investigate the phenomena of addiction among adolescents in which the most severe form of substance use associated with compulsive or uncontrolled use of one or more substances that lead to addiction and a likelihood of chronic brain disease and relapse and recovery. For most adolescents that experience substance abuse and addiction they are highly likely to become an involuntary servitude in which they are compelled to fulfill the demands of their dependency. This study will also examine how Latina/o families find coping mechanisms and outreach programs that are available to ameliorate substance abuse. Due to the sensitive nature of this study, that is, research that is gathered from children, and the ethical protocols that are now regulated to avoid harm, the methodology for this study will utilize secondary data from various databases (a meta-analysis) that are quantitative and qualitative based. This triangulation approach will allow this study to find quantitative correlational findings of the aforementioned variables from data that is available from (SAMHSA, 2016) and the (HHS, 2016) databases.

Grain Size Analysis and Atterberg Limits of Touchet Bed Soil

Christa Murphy, Andrew Scholz, Joel Orchard, Kylie Ottmar

Richard Orndorff, Geology

The Touchet Bed soil was collected in southeastern Washington from the town of Touchet. In this study we present results for grain size distribution according to ASTM standard 4318 (Schroeder et al, 2014) and liquid limit, plastic limit, and plasticity index using ASTM D-422 (Schroeder et al, 2004). We determined that the Touchet soil was 55% sand and 45% fines based on the grain size analysis. The Touchet soil has no liquid limit, and a plastic limit of 24% (water content). Due to the lack of liquid limit, the Touchet soil did not have a plasticity index. These parameters were also tested for two types of clays for comparison. Results indicate that Touchet soil is ML (silt with a low liquid limit) according to United States Soil Classification.

Carbon Dioxide Capture in Natural Gas Using Porous Materials

Brennan Nation

Yao Houndonougbo, Chemistry & Biochemistry

Carbon dioxide (CO₂) is a critical component to the advent of global warming. The use of natural gas, which is primarily composed of methane (CH₄), is a promising approach to reduce the emission of CO₂. However, the presence of CO₂ as one of the main impurities of natural gas reduces its energy content. Zeolitic imidazolate frameworks (ZIFs) are a class of metal-organic materials that are composed of transition metal ions that are tetrahedrally bonded to imidazolate linkers. The materials are very porous materials with a high thermal and unusually chemical stability. Zifs are non-toxic and easy to prepare with different zeolite topology. These properties make ZIFs materials interesting candidates for carbon capture and separation. In this work we have considered the zeolitic imidazolate framework 71 (ZIF-71) having the zeolite RHO topology. We have performed Gibbs ensemble Monte Carlo simulations to study the equilibrium selectivity for an equimolar mixture of CO₂ /CH₄ in ZIF-71 at 298K and for pressures up to 80 bar. The results of the simulations revealed the role of pressure in the separation performance of ZIF-71. The results also show the preferential adsorption sites of CO₂ and CH₄ in the material studied. This study improves our understanding of gas separation of porous materials for carbon dioxide capture.

Analysis of the Pleiotropic Heat Adaptive TRPV3 Gene in Columbian Mammoth

Francis Neff, Steven Patrick

Randall James,

There are many theories as to why Columbian Mammoth went extinct approximately 10,000 years ago. Population decline was likely due to a combination of factors, including shifts in ecosystems due to the increase in global temperature. Failure to heat regulate poses complex challenges to mammals. These factors prompted us to look at the ubiquitous mammal heat regulating TRPV3 gene. This pleiotropic gene activates at 22-40C and has been shown to promote hot temperature regulating pathways. The TRPV3 gene sequence has not been published in association with Columbian Mammoth, but when comparing the TRPV3 sequence for African elephant and other mammals, it appears to be relatively conserved. Recently, the Woolly Mammoth's TRPV3 gene was sequenced and a single nucleotide polymorphism was identified that has a reverse pleiotropic influence on the Woolly Mammoth; it provides Cold tolerance. Columbian Mammoths ranged much farther south, even into the tropics, than the Woolly Mammoth and would have needed both hot and cold pathways to have survived in its expanded range. What unique mutations in the TRPV3 gene did Columbian Mammoth have that allowed them to live a life of extremes? Utilizing PCR primers designed from conserved regions of the TRPV3 gene, DNA extracted from Columbian Mammoth bone was successfully amplified using optimized protocols and is being prepared for DNA sequencing. Gene polymorphisms will allow for analysis of gene function and may shed light on the extinction of mammoth and its relationship with climate change towards the end of the Pleistocene and much broader implications to modern mammals and Global Warming.

The Effect of Climate Conditions on the Seasonality of Mosquito Genera

Faurest Nelson Wicks

Krisztian Magori, Biology

As climate change continues, West Nile is forecast to become a larger problem in the United States, where in 2015 we already have had 2,175 cases and 146 deaths. In 2015 Western Washington experienced a record-setting drought, with high temperatures, low river levels and critically low snowpack, conditions that will be eventually become "the new normal" with climate change. These conditions often lead to higher rates of West Nile transmission, as the passerine birds that carry the virus are forced into closer contact with Culex mosquitoes, the disease vector, as they try to access dwindling water resources. In order to investigate the potential effect of drought on mosquitoes, we collected mosquitoes at Turnbull National Wildlife Refuge, a popular summer place to visit, during the summer of 2015 and 2016, a more

typical summer for the area. Collections were made between June and September using dry-ice baited CDC mosquito traps. Tallies were taken of the number and species of mosquitoes. Comparisons of the two years show that during the drought year, the number of *Culex* mosquitoes peaked early, in June, while in 2016 they peaked much later, in August. Proportions of *Culex* mosquitoes to other genera (remained the same, were different). Comparisons of these two years may show what Western Washington can expect as summer months become hotter and drier under the influence of unchecked climate change.

To The Girl Who Came After Me

Amanda Nicole

Elizabeth Kissling, Women's & Gender Studies

A series of greeting cards from a female victim to the next girl victimized by her abuser. The research indicates that, particularly among college students who self-identify, a minority of sexual aggressors and abusers commit a majority of offenses. The underlying story follows a series of re-gifted holiday cards with not-so-subtle warnings ("When Santa watches while you sleep, it's creepy. When your boyfriend does things while you sleep, it's assault."), signed by multiple women, implying that the same abuser has violated a number of different people. The series ends with thank you cards from each girl to the one before her, acknowledging that communicating about our experiences can help end the cycle of serial abuse.

Study on *Pseudomonas-fluorescens*-L5.1-96 Super Colonization

Charles Nitschke

Ruth Kirkpatrick,

Take-all is a crop destroying disease of cultivated wheat caused by the fungus *Gaeumannomyces graminis* var *tritici*. *Pseudomonas fluorescens* is a bacterium that suppresses the Take-all disease through the production and subsequent buildup of several antibiotics. This study investigated the exceptional colonization and drought tolerance of *P. fluorescens* L5.1-96 by extracting, sequencing, and analyzing DNA fragments from three clones of the genomic library of *P. fluorescens* L5.1-96. Four DNA sequences were retrieved from clone PF009-G #4. BLASTn analysis of DNA from clone PF009-G #4 suggests code for a SAM radical NirJ biosynthesis gene involved in producing the Heme d1 cofactor, which helps with the reduction of oxygen in low oxygen environments. The presence of Heme d1 suggests *P. fluorescens* L5.1-96 is able to effectively colonize the rhizosphere under low oxygen conditions, perhaps contributing to the enhanced colonization ability of the strain.

Raising Awareness of Mental Illnesses in Rural Teenagers

Haley Oestreich

Anna Tresidder, Health Services Administration

Twenty percent of high school teenagers suffer from a mental illness (MI) and 50% of mental illnesses spike around the age of 14. This coincides with the common time students begin to decide their future paths. Schools are currently deficient in education and resources to adequately assist students suffering from or providing social support to those with MI. This case study will examine one rural high school in Washington State. The case study will use mixed methods to illustrate a complete picture of one school's approach to MI. Results of a pre-post anonymous survey will demonstrate the levels of knowledge of MI, the current resources available to students, and their attitude towards MI. An educational seminar on MI will be presented to students and be interactive to encourage the teens to understand MI. Interviews with administration, counselors, and health education instructors will illustrate institutional perceptions of how MI is handled in schools, what they believe is lacking from the current services and changes they would like to see. The results will also help the school leaders understand the importance of improving mental illness awareness in high schools. Schools should strive to

improve approaches towards MI and encourage the students to use the resources available. We must do the best for our future; improving mental illness education is only the beginning.

Moving from Frustration to Success in Service Learning

Cassandra Oppedal

Teena Carnegie, English

In a service learning article by Rehling, she defines a service learning internship as one that “[is] with a nonprofit [and involves] learning about writing within a complicated political and cultural context ... [while] reflecting upon the power of communication to effect social change.” In the same article Rehling quoted a student that described the service learning internship as allowing them to “work on a project that had a place in the community ... and [to gain] real experience.” Service learning simultaneously offers a student the chance to improve their community and to enhance the understanding of what they have learned with hands on experience. Some students do not always receive the same quality of learning experience that others do. Students can experience frustration while working with their community partners and disappointment when their original learning goals are not met. However, the issues students may experience with service learning do not always outweigh the benefits. In this poster, I will discuss my own experience with service learning interning as a grant writer with the Spokane Lilac Festival. I will go over my original expectations of the experience, what professional skills I actually gained as a result of the experience, and how I used those skills to better the community.

Analysis of Regional Moths’ Electron Transport Genes for Clues to Cold Tolerance

Calvin Payne, Ireland Shoemaker

Randall James,

Organisms around the world have complex adaptations to meet complex environmental constraints. *Gynaephora groenlanica* is one such organism. *G. groenlanica* can withstand being frozen for months, even years, and still survive without loss of function after thawing. We hypothesize that they may have a leaky electron transport chain (ETC) that would lead to heat generation rather than ATP production. Since they spend most of their life cycle encased in snow and ice they would not need ATP as much as slight amounts of heat to maintain critical life processes. Sequencing key protein genes involved in the ETC will expose potentially interesting polymorphisms that may explain their unique ability. Since *G. groenlanica* is not available to us we chose to use local moths that were active during very cold nights as our model organism. We focused on small moths, since these were less likely to be warmed by their heat retention due to body weight and more likely to have a genetic mutation allowing them to function at freezing temperatures. PCR primers specific to mtDNA ETC protein genes were designed and optimized. They successfully amplified ETC protein genes and will be sequenced once sequencing protocols are optimized. Understanding how moths survive extreme conditions have far reaching applications to human exploration and colonization of cold environments including space.

Evaluation of 16s Bacterial Gut Consortia from *Bombus Impatiens* Using Modified AFLP Analysis

Kaylee Perich, Anna Danford, Alex Horn, Sabra Dunakey

Randall James,

North American Bumble Bees (*Bombus*) have experienced a sharp decline in their population within the past 20 years. Because the Bumble Bees are such an important pollinator, this poses a challenging problem. In the United States alone the agricultural pollination that is provided annually by *Bombus* amounts economically to about 3 billion dollars. The precipitous decline not only affects our food supply of certain crops but also decrease the average GDP produced by the United States. Many factors can be linked to the *Bombus* decline, however we believe that it is due in part to a lack of diversity that is found within their gut microbiota, thus giving them greater susceptibility to harmful disease which in turn is causing this decline. In order to identify that a lack of diversity is present our study uses an optimized and modified

AFLP (Amplified Fragment Length Polymorphism) technique to explore the gut microbiota of Bumble Bees. We are applying the AFLP protocol to multiple hives to better understand what diversity exists and how it compares from hive to hive, and across similar species such as Honey Bees.

Facts & Alternative Facts: Exploring Depictions of Infant Mortality in Frank McCourt's Limerick

Hannah Pithan

Frank Houghton, Master of Public Health

Background: Frank McCourt's best-selling memoir of life in Limerick during the 1930s and 1940s depicted a pathogenic environment with few redeeming features. Heavily influenced by his father's 'outside' perspective. McCourt paints a picture not only of a desperately 'sick city', but of a city significantly more harmful to health than other contemporary cities. His negative portrayal of slum life in Limerick has been hotly contested by residents of the City. Other more positive accounts of Limerick have since emerged and McCourt's work has been critiqued for supposed inaccuracies.

Aim: This research aimed to explore the veracity of Frank McCourt's depiction of life and death in Limerick City from 1935 to 1950 through an examination of contextual evidence. This research focused specifically on Infant Mortality in Limerick Ireland. Method: Secondary analysis of archival data based on vital statistics mortality data from Ireland's Annual Reports of the Registrar-General from 1935-1950 were examined. Results: From 1935 to 1941 the infant mortality rate in Ireland as a whole, Dublin and Limerick County Borough were all close to the same rate with Dublin being slightly higher than the other two. In 1942 we see a spike in the total mortality rate in Ireland while the rates in Dublin and Limerick were similar to the years before. Discussion & Conclusion: Due to the wet climate in Ireland and the conditions families were living in throughout the 1930's and 40's the infant mortality rate was high. Infant death was not uncommon, especially for those that lived paycheck to paycheck and struggled to find food and a stable home.

Literal vs. Figurative: Two Contrasting Approaches to Scenic Design

Mica Pointer

Shana Joslyn, Theatre

When creating a scenic design, there are two general approaches. The first is to literally represent the building or environment in which the action takes place, and the other is to base the designs off of a more interpretive, metaphorical, and abstract depiction. My two designs for "Lend Me A Tenor" and "Batboy: The Musical" both portray these two contrasting approaches to scenic design, for where one is very literal in putting forth a 1930s hotel room, the other is very abstract, being inspired from themes and metaphors inspired by the musical's text. Though they are completely different in their interpretation and approach to the source material, they both have the common function of creating a world for the performance to take place in.

Synthesis of α -amino Arylacetic Acid Boron Complexes with Ligands Containing Amino Acids

Taylor Pottschmidt

Ashley Lamm, Chemistry & Biochemistry

Boron containing compounds can be used as florescent markers. These markers can then be used to track intracellular protein movements. By tracking where a protein moves within a cell, researchers can move one step closer to understanding a proteins function. Protein function is important due to the fact that proteins are the most versatile macromolecules in living systems and play important roles in essentially all biological processes. To create these boron complexes we use multiple step synthesis to create ligands that contain an amino acid. Amino acids are the building blocks of proteins. We can introduce our modified amino acids to track intracellular protein activity. We used palladium-

catalyzed cross coupling conditions, hydrolysis reactions and reductions to create the desired compounds. The synthesis and results will be discussed in detail.

Using Lichens as a Model for Glutathione Synthase Genetics in Coral Reefs

Marissa Pounds, Anna Danford, Heidi Niederstadt

Randall James,

Lichens, a symbiotic organism, are well known for their tolerance of a variety of environmental strains such as thermal and toxicant stressors. Coral reefs on the other hand, though also symbiotic, are frequently exposed and broken down by a series of similar environmental strains, eventually causing bleaching; the event of coral expelling their symbiotic partner, a class of algae known as Zooxanthellae. In this study, the research group is attempting to analyze how antioxidants, specifically glutathione, are genetically different from coral to lichens. Looking at the genetics of the protein that creates this specific antioxidant, glutathione synthase, the study is currently genetically sequencing and analyzing a variety of lichen samples and in the near future, coral. The goal of this project is to evaluate the variances in the genetic makeup of the glutathione synthase protein in both lichens and coral and determine whether these variances are the reason behind why lichens can tolerate stress at a higher rate and intensity than coral can.

Knowledge of the Triple Aim among Health Profession Students and Its Perceived Relevance to Their Professional Practice

Cassie Prather, Amelia Kraft

Anna Tresidder, Health Services Administration

The Triple Aim (Berwick, D.) is a framework created by the Institute for Healthcare Improvement (IHI), which is designed to improve the healthcare system performance. The three dimensions of the Triple Aim seek to improve the patient experience of care, population health and reduce the per capita cost of healthcare. The US health system is the most costly in the world. It accounts for 17% of the US gross domestic product with predictions that the percentage will grow to nearly 20% by 2020 (National Healthcare Expenditure Projections, 2010-2020). It is expected that healthcare will have moved, or begun to move, towards a value-based, patient-centered industry, which will help regulate healthcare funding. Current challenges in the US include: providing adequate services for the aging Baby Boomers who are high utilizers of health services, and the increasing prevalence of chronic illnesses, and the obesity epidemic. These challenges are just a sample of how the Affordable Care Act is based on the Triple Aim. The purpose of this research is to identify to what extent health professions students know about the Triple Aim. An anonymous survey was distributed to students across a shared health sciences campus (N=189), where three universities conduct classes for a broad spectrum of health professions students. Results will be analyzed using correlation coefficients to illustrate relationships between several variables, e.g. knowledge of the Triple Aim, the value of contributions to healthcare improvement, school attended, health profession program, or year within their training program. Secondary research will supplement survey data in contextualizing findings regarding the extent to which health profession students across the country know about the Triple Aim. The Triple Aim Framework can form the basis for a comprehensive approach to health professions education and can directly support the growing needs for the evolving health system.

The Source of Excess Nutrients to Pine Draw

Henry Price

Camille McNeely, Biology

Nitrogen and phosphorus are the most common limiting nutrients in freshwater ecosystems. The Haber-Bosch process produces agricultural fertilizer through conversion N₂ gas to biologically available NH₃, but only around 60% of applied nitrogen is used by crops. Excess nitrogen enters groundwater and streams. On the Turnbull National Wildlife Refuge (Cheney, WA), Pine Draw experiences high nutrient concentrations in the absence of human development. Philleo Ditch
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is an adjacent agricultural stream, and may be the source, through shallow underground flow. We analyzed nitrogen in surface water and groundwater in these watersheds from April 2016 – March 2017. Preliminary data are consistent with groundwater as the source of nitrogen; concentrations in surface water were highest just downstream of springs. Preliminary data also indicate high nitrogen runoff in the adjacent agricultural watershed, but cannot determine if this is the source of groundwater nitrogen. Analysis of stable nitrogen isotope ratios (in progress) will help determine if the nitrogen originates from fertilizer.

Molecular Dynamics Simulations of Human Inosine Triphosphatase R178C Mutant

Bethany Pugh

Yao Houndonougbo, Chemistry & Biochemistry

Inosine triphosphatase (ITPA) is an enzyme that hydrolyzes inosine and xanthine nucleotides to form monophosphate derivatives. In performing this function, ITPA reduces the accumulation of these noncanonical nucleotides as well as ITP. Mutations within ITPA can lead to diseases and even cancer, making it an important enzyme within homosapiens. The Human ITPA protein is a homodimer with two symmetrical molecules, which are non-covalently bonded. Arginine at the position 178 is a critical residue that is conserved across the ITPA-like family of NTP pyrophosphatases and is assumed to be involved in substrate specificity by hydrogen bonding. In this study, we used molecular dynamics (MD) simulation to understand the effect of R178C mutation on the structure of ITPA. The results for more than 100 nanoseconds of simulation show the influence of R178C mutation on the 3D structure and flexibility of ITPA. The analysis of the simulation trajectories also revealed the detail conformation change of the ITPA mutant. This study is an important starting point for protein engineering design of ITPA.

Looking for Mechanisms of *Gaeumannomyces graminis* var. *tritici* Suppression and Wheat Rhizospheric Colonization in the DNA of *Pseudomonas fluorescens* L5.1-96

Stephen Purdue

Ruth Kirkpatrick,

Pseudomonas fluorescens has been an important subject of research for finding ways to combat fungal diseases in wheat crops in Washington States's Palouse region. Specifically, the L5.1-96 strain of *P. fluorescens* has shown a high capacity for colonizing the rhizosphere of wheat and in suppressing the fungal disease Take-all caused by *Gaeumannomyces graminis* var. *tritici* (GGT). To better understand these exceptional properties of P. f. L5.1-96, DNA analysis was employed to search for proteins involved in disease suppression and root colonization. This study extracted, sequenced, and analyzed DNA fragments from three clones of the genomic library of P. f. L5.1-96. Data suggests these DNA sequences code for a variety of proteins that may help P. f. L5.1-96 colonize wheat roots and suppress Take-all.

Does Financial Aid Impact Student Success at Regional Comprehensive Universities in the U.S.? A Panel Data Approach

Donya Quarnstrom

Kelley Cullen, Economics

With increasing scrutiny being placed on the rising costs of a college education, regional public universities are being held accountable for their students' success and are therefore continually working towards improving academic outcomes at their institutions. This improvement demands an understanding of factors affecting graduation and retention rates including challenges students may face being low-income, parenting students, the amount and different forms of funding, and managing student loan debt. This study focuses on the relationship between student financial aid and measures of student success to include retention and six-year graduation rates. Using a panel data approach testing for both random and fixed effects with generalized least squares from a selection of 62 institutions within the same Carnegie classification,

we found that universities with more students receiving federal grants typically had higher six-year graduation rates. Retention rates and six-year graduation rates increased with higher average federal grant amounts. Schools with more students using loans increased retention rates, but decreased graduation rates. We found particularly interesting that a higher percentage of students receiving general aid had a negative relationship with six-year graduation rates, while increased amounts of Pell Grant and federal funding had a positive relationship with the graduation rates of its recipients.

Culture of Zebrafish Ovarian Cells to Facilitate the Study of *Pseudoloma Neurophilia*

Christina Ramelow, Laura Hansen

Charles Herr, Biology

Zebrafish, *Danio rerio*, a model organism for developmental biology, are plagued by *Pseudoloma neurophilia*. *Pseudoloma neurophilia* is also suspected in global amphibian extinction. Our research's goal is to develop a system to study the process of how *Pseudoloma neurophilia* infects zebrafish ovaries. Zebrafish with enlarged ovaries were euthanized, washed with 70% ethanol and dissected. A special microtome, a Vibratome, was used to generate 400um thick ovarian sections while keeping cells alive. The sections were transferred repeatedly (3X) into 6 mL of antibiotic rich DPBS in 65mm Petri dishes, followed by two washes in TCM-199, which contained 5mg/mL BSA and 12.5% fetal calf serum. Single-cell suspensions were then made from these thin sections. Samples were placed in 2mL of DPBS that contained 2.5mg/mL trypsin. After 2 minutes, the 10 mL tubes were vortexed for 30 seconds. Test tubes were centrifuged sufficiently to create a soft pellet at the bottom of each tube. Supernatant was removed and replaced with an equal volume of DPBS and cells were re-suspended. The process was repeated 3 times. This was followed by 2 additional centrifugations in TCM-199. The cells were moved to dishes with 6mL TCM-199, which had been modified to ensure a pH of 7.2 in a CO₂ atmosphere of 7.25%. Dishes were placed in a 7.25% CO₂, 7.2% O₂, and a balance of N₂ atmosphere and were incubated at 28oC for 48 hours. Following culture, cells were live/dead cell stained (Molecular Probes, L-3324). From our observations using fluorescent microscopy, we concluded there was no bacterial contamination and the cells were alive.

Community Grant Writing: Kindling the Hearth

Tessa Reininger

Teena Carnegie, English

“In doing, we learn.” According to George Herbert, individuals acquire skills through experience. A student does not become a successful grant writer from absorbing only textbooks and lectures. Practical application is necessary to develop proficiency. Service learning proffers an impactful opportunity to apply knowledge to tangible community issues and contribute to change, merging theory and professional practice. Not only does service learning fertilize academic growth, but also encourages students to problem solve and learn from professionals. For my TCOM 407 Project, I collaborated with Transitional Programs for Women (Transitions), specifically its program Women's Hearth. Transitions is an organization supporting homeless and low-income women in Spokane. The Spokane and WA homeless rates averages exceed the US averages (“Housing: Total One Day Count for Homeless Persons,” 2015), and 70% of the population is women (“Women and Poverty in America,” 2016). They do not have resources to maintain personal hygiene or prevent long-term health issues. My team developed a grant proposal, prioritizing basic needs assistance for women to increase their self-sufficiency. The Transitions Grant Writer provided her expertise in exchange for hard work and commitment by students. This presentation will analyze the benefits of service learning for both students and communities by demonstrating grant writing requires more than a textbook to think critically and initiate impactful change.

Conceptual Monogamy

Sara Ring

Galina Sinekopova, Communication Studies

Monogamy is the social standard in Western civilization, but has it always been that way and if not how did we get there. Within the confining definitions of monogamy lies polygamy. Monogamy started with the elite mandating of it in Greco-Roman times to allow for the lower-class men to marry. Which encouraged them to participate in their society, fight their wars, and pay taxes. Modern day polyandrous people make up the same amount of the population percentage wise as those included under the LGBT community but only one is allowed to openly express their love.

Effect of Halide-Doping on the Structural and Magnetic Properties of Quasi-2D

NiX₂(pyrazine)₂ (X= Cl-, Br-, or I-)

Jessica Ripley

Jamie Manson, Chemistry & Biochemistry

Nickel (II) compounds with square lattice structures are a topic of interest in the modern scientific community. This is caused by their potential of obtaining innovative quantum states of matter (e.g. spin liquids) under extreme conditions. Because of this we are studying a group of polymers with the general formula of NiX₂(pyrazine)₂ where X is a halide ion, such as Cl-, Br-, and I-. The pyrazine is a small organic molecule that is used to fuse the Ni(II) ions together. Recent studies of their magnetic properties have shown that NiCl₂(pyrazine)₂ does not exhibit magnetic order down to temperatures approaching absolute zero, while the polymers that contain the Br- and I- do magnetically order under the same conditions. Since this behavior is still unknown we are attempting to make doped samples by replacing Br in pure NiBr₂(pyrazine)₂ with a varying amount of Cl, and vice versa. Our aim for these polymers is to determine the critical concentration that will be required to switch the magnetic order on or off.

Facts & Alternative Facts: Exploring Depictions of Tuberculosis in Frank McCourt's Limerick

Jessica Rodarte, Shandiah Mendoza, Dana Colley

Frank Houghton, Master of Public Health

Background: Frank McCourt's best-selling memoir of life in Limerick during the 1930s and 1940s depicted a pathogenic environment with few redeeming features. Heavily influenced by his father's 'outside' perspective. McCourt paints a picture not only of a desperately 'sick city', but of a city significantly more harmful to health than other contemporary cities. His negative portrayal of slum life in Limerick has been hotly contested by residents of the City. Other more positive accounts of Limerick have since emerged and McCourt's work has been critiqued for supposed inaccuracies. Aim: This research aimed to explore the veracity of Frank McCourt's depiction of life and death in Limerick City from 1935 to 1950 through an examination of contextual evidence. This research focused specifically on Tuberculosis (TB). Method: Secondary analysis of archival data based on vital statistics mortality data from Ireland's Annual Reports of the Registrar-General from 1935-1950 were examined. Results: An examination of the Registrar General Records of Ireland revealed that the mortality rates from Tuberculosis were significantly higher in Limerick County Borough than in other parts of Ireland. Limerick County Borough had the highest overall mortality rate from Tuberculosis when compared to Limerick County, the province of Munster. Discussion & Conclusion: Frank McCourt's depiction of Limerick County Borough as a city with comparatively high Tuberculosis mortality rates appears supportive. As indicated in McCourt's memoir, McCourt lived in Limerick County Borough from 1935-1949.

Fern Watch Washington

Sarah Rodgers

Ruth Kirkpatrick,

Western sword fern (*Polystichum munitum* (Kaulf.) C. Presl) is a common evergreen fern on the forest floor of coniferous forests throughout the Pacific Northwest of the United States and Canada. To better understand how climate impacts this common species, Fern Watch project scientists in California have tracked the size and abundance of sword fern populations along a latitudinal gradient in coastal redwood forests since 2012. Fern Watch California researchers have found that sword fern size and abundance is positively correlated with annual precipitation, and individual sword ferns produce smaller and fewer fronds in low precipitation years and larger and more fronds during high precipitation years. The purpose of this study was to analyze the first year of Fern Watch Washington project data collected from five sites along a longitudinal gradient across Washington State during Summer 2016. Site locations include the Hoh Rainforest and Heart of the Hills in Olympic National Park, Forks of the Sky State Park on the western slope of the Cascades, a site near Lake Wenatchee on the eastern slope of the Cascades, and in the Riverside State Park forest above the Spokane River northwest of downtown Spokane. Initial data analysis shows positive linear correlations between precipitation and frond abundance per site, as well as between precipitation and mean frond length.

Sequencing the Genome of *Pseudomonas fluorescens* L5. 1-96

Sarah Rodgers

Ruth Kirkpatrick,

Take-all disease, caused by the fungus *Gaeumannomyces graminis* var. *tritici*, has been studied for decades because of the devastation it causes to cultivated wheat world wide. Antibiotics derived from *Pseudomonas fluorescens* have been found to suppress Take-all. The goal of the ComGen project is to sequence the genome of *P. fluorescens* L5.1-96 because it is a superior root colonizer, soil survivor, and is more tolerant of drought than other strains of *P. fluorescens*. The ComGen project is searching for the genes behind these traits and began with the creation of a *P. fluorescens* L5.1-96 genomic library. The goal of this experiment was to culture several genomic library clones, and extract, amplify, sequence, and analyze the *P. fluorescens* L5.1-96 DNA fragment sequences obtained. DNA fragment extraction and sequencing from clones PF008 #5, PF008 #13, PF008 #14, and PF008 #15 suggest code for a chromosome partitioning protein, a putrescine ABC transporter, an outer membrane lipoprotein, a DNA repair protein, and non-ribosomal peptide synthetase. The superior colonizer, soil surviving, and drought withstanding genes were therefore not found, but progress was made toward a better understanding *P. fluorescens* L5.1-96.

Attitudes of University Faculty & Staff about Title IX

Jacquelyn Ross

Kayleen Islam-Zwart, Psychology

The purpose of this study is to examine the attitudes of faculty and staff at a mid-size university about Title IX. Furthermore, this study will compare the attitudes of faculty and staff who are in the campus athletics departments and the attitudes of faculty and staff who are not. Although Title IX was originally passed in 1972 it was not fully active until 1988 (“Legislative Chronology”, 2012). Since then there has been an explosive amount of participation in sports by women and girls across the country (Dowling, 2000). Title IX has made schools safer for all students (not just girls) and teachers by being a legal standing against gender based bullying and harassment (“Title IX Protections”, 2011). However, previous research has shown that in the athletic community in particular there is still negative attitudes towards the implementation of Title IX in athletic programs (Kane, 2012; Paule-Koba, Harris & Freysinger, 2013). Participants will be faculty and staff from all different areas of the university. Participants will receive and complete a survey about their attitudes and knowledge levels about Title IX. This research project will hopefully contribute to a body of literature in support of the importance of Title IX and its role both on and off university athletic fields.

Granting a School's Wishes

Abigail Scarborough

Teena Carnegie, English

Every year, over 1,000 children in the Spokane area will be born with a developmental delay. In order for these children to meet their fullest potential, easy access to early-intervention special education programs is crucial. Without these services, families are left very few options for their children's education and developmental growth. The Spokane Guilds' School (SGS) is one of the few establishments that offer these services to children. SGS provides children with specialized pediatric care and personalized treatment programs that include occupational, physical, speech therapies, and special education programs. In my poster presentation, I will outline my service-learning project and experience. The Spokane Guilds' School was in need of a \$30,000 grant for Electronic Medical Records. Acquiring this system would increase the overall efficiency of the school. I wrote a grant on behalf of SGS requesting funding from Itron. This service-learning project allowed me to grow both academically and personally. My learning experience was enhanced by the ability to personally help the community. Through the project I increased my commitment to civic engagement. Service-learning projects enable students such as myself to gain the value of real-world experience, whilst also benefiting the community.

16 Year Old Male High School Athlete with Spondylolisthesis

Jayne Schaefer, Carli Robins, Eli Strom

Garth Babcock, Physical Education, Health & Recreation

Spondylolisthesis is a condition of the spine. Commonly referred to as a stress fracture located bilaterally in the pars interarticularis of the vertebrae. This condition is most common in the lumbar spine, but can also occur in the cervical spine (Highsmith, MD, Jason M.). The patient presented in this study is a 16-year-old Male high school athlete. The athlete had no previous injuries to the spine. Started to present symptoms in January 2016, and was diagnosed via imaging later that year in July. Imaging showed a slipping of the spine at L5 and congenital predisposition to this kind of injury at L5. Patient and guardians decided to wait and see if non-aggressive treatment would help, and has currently been cleared by a physical therapist to participate in the 2017 baseball season.

Oroville Dam, the Unfolding Tale of the Nation's Tallest Dam

Justin Schneider

Richard Orndorff, Geology

The California Department of Water Resources constructed Oroville Dam between 1961 and 1968. It is an earth fill embankment dam made by compaction of semi plastic and fill material mounds with a water proof cover and an impenetrable core to prevent seepage erosion. Oroville Dam impedes the flow of the Feather River in the Sierra Nevada foothills east of Sacramento Valley. It stands 235 meters (770 feet) tall and is the tallest dam in the United States. The dam generates electricity and power and serves as a water supply while creating Lake Oroville, the second largest reservoir in the state of California, with a water storage capacity of 3.5 million acre-feet. To date it is estimated to have prevented more than 1.5 billion dollars in flood damage as well as saving untold lives. In 2005 environmental groups objected to the spillway design during relicensing, and the main spillway fractured in 2013. In February 2017 intense snowmelt and rainfall damaged the main and emergency spillways of Oroville Dam, causing a mandatory evacuation of approximately 188,000 people until water levels stabilized. While the latest evacuation warning is over, there is still a threat, as temperatures warm and increasing snowmelt enters the river system. The world watches as California races to repair the damaged spillways (at a cost that will likely exceed \$100 million) and preserve stability of the entire dam.

A 20 Year Old Division I Football Player with Loose Bodies in the Elbow

Cassidy Schreiber

John Gerber, Physical Education, Health & Recreation

Traumatic elbow hyperextension is a common injury amongst contact sport athletes. Many further elbow pathologies may be caused from elbow hyperextensions, yet many studies are done on overhead throwing injuries, or caused by other repetitive overhead loads (Popovic, N., & Lemaire, R., 2002). These further pathologies are often caused by multiple traumas, being left untreated, or left undiagnosed. The purpose of this case study is to examine a Division I collegiate football player with a history of repeated traumatic elbow hyperextensions left undiagnosed and untreated for three years. It will cover the initial incident, resulting pathology, pre-surgical intervention, and further surgical intervention. Providing a case study on an unusual result of multiple traumatic elbow hyperextensions will provide new or further insight on the treatment and rehabilitation of traumatic elbow hyperextensions and the importance of proper diagnosis after an injury.

Improving the Sensitivity and Effectiveness of the Fast-Scan Cyclic Voltammetry Dopamine Electrode

Joel Seier, Jackie Rodgers, Nathan Scherk, Diana McSwain

David Daberkow, Biology

Introduction: Fast-scan cyclic voltammetry (FSCV) is a method of monitoring neurochemicals (e.g., dopamine) in the brain. The purpose of this study was to develop a procedure to coat FSCV electrodes with NCAM (neural cell adhesion molecule) in effort to improve electrode performance. **METHODS:** The sensitivity to dopamine was assessed in vitro (in an experimental flow cell set up) before and after NCAM coating. FSCV electrodes (n=6) were first sterilized with 70% alcohol and then exposed to 8M nitric acid, dry toluene (100-98%), 2% solution of (3-mercaptopropyl) trimethoxysilane, 2mM 4-maleimidobutyric acid N-hydroxysuccinimide ester, 100 µg/ml NCAM, and 100µM Poly (ethylene glycol)-NH₂. **RESULTS:** In vitro data collected thus far suggests NCAM coating improves the dopamine sensitivity of FSCV electrodes. **CONCLUSION:** Further research is needed to identify the precise chemical treatment step (or steps) in the NCAM coating procedure responsible for the improvement in electrode sensitivity to dopamine. Future directions include implanting NCAM coated FSCV electrodes in dopamine innervated regions of the rat brain to investigate the effects of NCAM coating in vivo (dopamine signaling in freely-behaving rats).

Facts & Alternative Facts: Exploring Depictions of Mortality in Frank McCourt's Limerick

Aaron Serrano, Ryan Farrell

Frank Houghton, Master of Public Health

Background: Frank McCourt's best-selling memoir of life in Limerick during the 1930s and 1940s depicted a pathogenic environment with few redeeming features. Heavily influenced by his father's 'outside' perspective. McCourt paints a picture not only of a desperately 'sick city', but of a city significantly more harmful to health than other contemporary cities. His negative portrayal of slum life in Limerick has been hotly contested by residents of the City. Other more positive accounts of Limerick have since emerged and McCourt's work has been critiqued for supposed inaccuracies. **Aim:** This research aimed to explore the veracity of Frank McCourt's depiction of life and death in Limerick City from 1935 to 1950 through an examination of contextual evidence. This research focused specifically on overall mortality in Limerick, Ireland. **Method:** Secondary analysis of archival data based on vital statistics mortality data from Ireland's Annual Reports of the Registrar-General from 1935-1950 were examined. **Results:** The overall mortality rate in Limerick County Borough was broadly similar to the rate for Ireland for the years 1936 to 1950. However, as seen in the Total Death in Limerick graph, significant mortality is shown in children under five years old. This is relevant information because Frank had lost two young siblings soon after he and his family arrived in Limerick. **Discussion & Conclusion:** We can conclude that elements of Frank McCourt's depiction of Limerick C.B. were accurate. Most notably, in the death rates of infants and those under five years old.

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Ethos, Pathos and Changing Modalities in the Composition Classroom

Katherine Setzer

Justin Young, English

The rhetorical elements of communication are dynamic—a pendulum that swings back and forth based on the rhetorical situation. I am interested on how the three elements of communication: logos, pathos, and ethos are affected by changing modalities in the first year writing classroom. Given the field's nascent beginnings are imbued philosophy, traditional composition pedagogy emphasizes logos as main avenue of persuasion, leaving other elements (pathos and ethos) largely under taught. In today's multi-modal world of video, audio, and graphics, the writer becomes increasingly less of a disembodied voice—writers are accessible via YouTube, reddit, or twitter. These modes of composition promote ethos and pathos as avenues of persuasion in more prominent ways than written words alone. With access to the writer's image, the writer's blog, the writer's instagram, readers may have more access to delve into the author's ethos (character). In the political arena, methods of persuasion have shifted from evidence-based to emotional appeals (pathos). Emotional arguments are often dismissed in intellectual circles and within the first year writing classroom. However, to ignore emotional arguments is to leave students unarmed against a powerful avenue of persuasion. Rather than to ignore emotional arguments entirely, composition instructors should instead position pathos as a tool to be used by students to persuade.

Phosphorous Content in Hangman Creek, Spokane, WA

Larissa Severance

Camille McNeely, Biology

Phosphorous is a key component of water pollution in the Spokane River, as it is the limiting nutrient for algae blooms in Lake Spokane. Hangman Creek, a tributary of the Spokane River, is a significant contributor of phosphorous, hampering reductions in phosphorous levels to comply with the U.S. EPA's Total Maximum Daily Load. Phosphorous contributions from this creek fluctuate with yearly and seasonal variations in run-off. I collected water samples from Hangman Creek during winter and spring 2017 to determine phosphorous concentration and loads. Chemical analysis of the samples was performed using the molybdate method, on the automated flow analyzer in the Environmental Geochemistry laboratory at Eastern Washington University. Initial results indicate high levels of dissolved phosphate during high flows in February. I will compare phosphorous concentrations to discharge and turbidity to determine if there is a possible relationship. Data from this project can be used by the Spokane Riverkeeper to advocate for changes in pollution management for this watershed.

Synthesis of Novel Organoborohydrides

Jesse Shooter

Eric Abbey, Biochemistry

Metal organoborohydrides ($\text{MR}_n\text{BH}_{4-n}$) have the ability to act as hydride donors and reducing agents. The scope of compounds previously studied has been primarily focused on trisubstituted compounds (MR_3BH), with some examples of monoorganoborohydrides (MRBH_3), mostly limited to alkyl, and aryl, compounds, with few examples of heteroatom substitution. This project has been focused on a new reaction that converts potassium organotrifluoroborates (KRBF_3), into their corresponding MRBH_3 in a single step. This new reaction has greatly expanded the number of MRBH_3 s available for study, as several novel MRBH_3 s that were previously unattainable have been synthesized using this reaction. One of the primary benefits of this reaction is that it allows for the formation of MRBH_3 s with a wide variety of functional groups. The functional groups influence the selectivity and reactivity of the B-H bond, which influences both the compounds that the MRBH_3 s can react with and the products formed. To demonstrate the utility of these compounds, we have synthesized previously unattainable organoboranes (RBH_2) by using our novel MRBH_3 s as starting materials via

hydride removal with HCl in the presence of dimethylaminopyridine (DMAP), yielding the organoborane•DMAP (RBH₂•DMAP) adduct, which were characterized by X-ray crystallography.

Analysis of Novel Glutenase Genes Found in Wheat Consuming Arthropods to Find Potential Therapeutic uses for Celiac Disease

John Shuster, Marie Chapman, Sean Flannery, Kendall Bart

Randall James,

Increasing at a steady pace over the last century, the prevalence of Celiac Disease (the inability to digest gluten) has become a common issue. This disease, affecting at least 1% of the population, is an autoimmune disease that has detrimental effects on the small intestine. Found in wheat, barley, and rye, when consumed by those with celiac disease, gluten is unable to be digested which starts an autoimmune reaction. Degradation of the walls in the intestine cause a decrease in the body's ability to absorb nutrients, causing multiple types of anemia. Gluten is the sole cause of the autoimmune reaction. From here, the gluten protein is broken into its two counter parts: gliadin and glutenin. In this case, gliadin is the protein that causes the issues. When it reaches the small intestine and lands on the microvilli (the part of the intestine wall that absorbs nutrients), T-cells are signaled to destroy it. In doing so, they also degrade the microvilli. Currently, the only successful treatment is to consume a gluten free diet. However, this diet is often low in calories and rarely completely gluten free. Because of this, scientists are searching for treatments that would digest the gluten for those affected.

The Influence of Religion on Male and Female Educational Attainment

Corey Smith

Nicholas Larsen, Economics

This paper examines the relationship between religious background and educational attainment for males and females using the 2014 Pew Research Center Religious Landscape Study. Compared to other religions, Jews routinely have the highest level of educational attainment while No Religion adherents have the lowest level. Catholics have the middle level of educational attainment, and have advanced in their education compared to Protestants. Differences in attainment in education appear to be explained by more than just gender, income, etc. Religion and region appear to play a large role. Furthermore, female educational attainment, since the mid 1900s, has drastically increased for certain religions, though for some this change has been non-existent. Male attainment of education has gradually increased since the early 1900s.

Gender Differences in Psychological Reaction to Sexual Victimization Among Jail Inmates

Juro Smollin

Kayleen Islam-Zwart, Psychology

A history of sexual trauma has been shown to have adverse and lasting effects in men and women (Choudhary, Smith, & Bossarte, 2012). Such victimization is correlated with higher rates of substance abuse, depression, and anxiety-related problems. Additionally, there is a higher rate of victimization history in prison populations than the general population (Briere, Agee, & Dietrich, 2016). The study sought to understand how symptoms to previous sexual trauma manifest themselves differently depending gender among individuals recently incarcerated. Participants were 132 male and 40 female offenders incarcerated in a metropolitan county jail. The responses of male and female participants', (with and without histories of history of sexual trauma), to the Brief Symptom Inventory (BSI) overall and on nine psychological domains were examined to determine if there were any significant differences in their respective presentation of symptoms. Findings have implications for understanding and intervention with offenders.

The Impact of Overall Athletic Success on the Number of University Applications

Rachel Swindell

Kelley Cullen, Economics

Students consider many factors when applying to a university. This paper uses an OLS model and demonstrates that universities who experienced overall athletic success in 2013-14, measured by the Director's Cup, tended to have a higher number of applicants in 2014-15; compared to universities who did not experience athletic success. Universities spend millions of dollars per year on athletic programs, so whether overall athletic success impacts the number of applicants is an important question. Additional research could lag Director's Cup by two years or measure the impact that overall athletic success has on different genders when applying to a university.

Affeine and Its Effect on Muscular Endurance and Strength in Chronic Caffeine Users

Nicholas Taylor, Nick Anthony, Erin Clark, Alex Maszak, Tony Keovongphet, Brandon Kirian

Christi Brewer, Physical Education, Health & Recreation

Many individuals consume caffeine prior to exercise in an attempt to enhance performance; however, not all studies have demonstrated an ergogenic effect. The purpose of this study was to determine if a typical dose of caffeine would improve lower body strength and upper body muscular endurance in habitual caffeine users. This study was approved by EWU's IRB. Participants were verbally invited to participate. Those who met inclusion and exclusion criteria and chose to participate provided informed consent. Participants (n=8) were asked to abstain from caffeine for 48 hours prior to testing. In this double-blind placebo-controlled experiment, participants consumed either 150mg caffeine (10 oz. standardized coffee) or decaffeinated coffee (placebo) and performed a 5 repetition maximum (5RM) maximal effort leg press followed by a maximal effort YMCA push-up test. In this within-subjects design, participants returned 1 week after the first trial for the second treatment. In the current sample, the relative dose of caffeine was 1.78 ± 0.26 mg/kg ($1.4 - 2.2$ mg/kg). A repeated measures ANOVA revealed caffeine significantly improved leg press ($p=0.029$) and push up ($p=0.009$) performance. Caffeine resulted in an 11% improvement in 5RM leg press (placebo 539 ± 135 lbs.; caffeine 600 ± 161 lbs.) and 14% improvement in push up repetitions (placebo 35 ± 7 ; caffeine 40 ± 10). Our results indicate 150mg caffeine can improve muscular endurance and strength in habitual users. The relative amount consumed was less than that believed to be required for an ergogenic effect.

In Service of Philanthropy: How Communication Theories Can Strengthen the Fundraising Profession and Build the Capacity of America's Non-profit Sector

Laura Thayer

Galina Sinekopova, Communication Studies

The non-profit sector is called upon to meet multiplying social needs. The financial needs of the sector are outpacing resource development. Competition for philanthropic dollars is perhaps more intense than ever, yet there is a shortage of trained fundraisers. Due to the relatively recent professionalization of fundraising and the limited number of universities offering training or conducting empirical research, many people become fundraisers without professional training that reliably leads to professional practice and professional retention. Non-metro markets and small and medium size organizations, including universities, especially struggle to recruit and retain fundraisers with experience and a successful track record. Well-proven fundraising models are firmly situated in communication studies and buoyed by interdisciplinary research from brain science, psychology and economics. Universities geographically situated in these markets could play a significant role in improving fundraising practice across the sector while improving their own ability to prepare fundraising professionals for their own needs. This poster demonstrates how reciprocal interdepartmental partnerships between communication studies departments and university advancement could: 1) provide communication studies education for university fundraisers to improve professional practice; 2) create internship and mentoring

opportunities for communication studies students to feed prepared professionals back into the university; and, 3) conduct research and develop methods that contribute to the professionalization of the fund-raising sector.

Impact of Intranasal Administration of Oxytocin on Symptoms of Post-Traumatic Stress and Associated Reward-Seeking Behavior

Morgan Thomas

David Daberkow, Biology

Post-traumatic stress disorder (PTSD) is a mental health condition that affects people after instances of severe emotional trauma. Research suggests that oxytocin treatment decreases PTSD symptoms. The purpose of this study is to further evaluate the efficacy of intranasal oxytocin treatment on symptoms related to PTSD. The hypotheses are that oxytocin will decrease fear and anxiety, and increase reward-seeking behaviors. Sprague Dawley rats were assigned to four groups (Control, Stress, Oxytocin, and Oxytocin+Stress). Rats were pre-trained to expect a food reward (Kellogg's Froot Loop) in an open field enclosure. The Oxytocin and the Oxytocin+Stress groups were treated with intranasal oxytocin (0.1 µg/kg) and then the Stress and Oxytocin+Stress groups were exposed to an inescapable foot shock (inducing a rat model of PTSD). After oxytocin and shock treatments, rats were reintroduced to the fear conditioning to assess fear (increased defecation and freezing time). Preliminary data suggest decreased symptoms of fear and anxiety in the Oxytocin+Stress group compared to the Stress control; reward-seeking behaviors appear to increase in Oxytocin+Stress group compared to the Stress control.

21 yr old Division I Football Athlete with Osteochondritis Dissecans

Destinee Thomas, Harli Spurgeon

John Gerber, Physical Education, Health & Recreation

Osteochondritis dissecans is a disorder of subchondral bone that can affect the overlying articular cartilage. It is commonly divided into juvenile and adult forms. OCD affects 15 to 29 people per 100,000 of the general population each year, with the knee being the most commonly involved joint. OCD is most frequently seen between the ages of 13 and 21 and it is more commonly found in males. Juvenile osteochondritis dissecans lesions are often stable, with an intact articular surface, and they have the greatest potential to heal with conservative treatment. Adult OCD lesions are more likely to be unstable, require surgery, and have a worse prognosis. (Thompson, Jones, Lavelle, Williams, et. al 2014). The purpose of this case study is to evaluate a Division I collegiate football player who subluxed his patella and osteochondritis dissecans formed. It will cover the initial symptoms, evaluation, surgical intervention to remove OCD within the patella, and the athlete's current condition. Completing a case study on a condition that is commonly found in males, especially between the ages of 13 and 21, will provide new insight on how to prevent, treat and work with athletes who have OCD within the knee joint.

Look out for the Latah

Bradley Thompson

Chad Pritchard, Geology

This project identifies the type of basalt along the Fish Lake Trail and tries to describe the anomalous interactions between the younger Columbia Basalt Group and the Latah Formation, both Miocene in age. During the Miocene, the Columbia Flood Basalts had already been flowing and formations like the Grande Ronde Basalt formed to the west. The basalt that is along the trail has been identified as the younger Priest Rapid Member of the Wanapum Basalt and is interbedded with the Latah Formation. In most places this basalt overlays the clay but for some reason at the Fish Lake Trail location it is on either side and possibly below. It is supposed that the Priest Rapids Member either pushed the clays aside or even intruded into less dense layers of the Latah Formation. On certain parts of the trail Wanapum pillow basalts can be found indicating that there was still water during basalt emplacement. So it might even be that the clays were not yet hard and

the basalt literally flowed through mud. The presence of the basin may be due to the Latah fault, forming a half graben. This is a fascinating local geologic feature to behold.

Billie Jean King

Kelley Thorne

Chadron Hazelbaker, Physical Education, Health & Recreation

The life of Billie Jean King was an extraordinary one. King was the face of Women's Tennis when she was playing and still is the face of tennis. She was one of the greatest tennis players for not only what she did on the court but what she also did off the court. She would face many critics for what she stood up for and how she stood up for it. She was against inequality in sports and wanted to stop the inequality that was happening. King almost boycotted the U.S. Open because the prize difference for males and females were completely different. King would be the first woman to beat a man in tennis. King would end up being elected into the International Tennis Hall of Fame and the Women's Tennis Hall of Fame.

Connecting the Puzzle Pieces within the Community

Andrea Tobar

Teena Carnegie, English

The number of individuals affected by Autism Spectrum Disorder has increased by 119.4 percent from 2000 to 2010 (CDC, 2014), and is still rising. Individuals with autism are seven times more likely to have an emergency which requires interaction with a first responder (Stelter, 2015). Unnecessary conflict escalation between first responders and the ASD community is not unusual, due to the individuals with autism's inability to respond appropriately, or the first responders being unaware of the disability. There is no established curriculum that includes behavioral training for emergency situations outside of the classroom. The ISAAC Foundation seeks to address this issue by developing a first responder training curriculum, which will promote safe interactions with responders. In this presentation, I will examine the need of this training program on an individual and community level. I will also discuss the goals of the foundation's training program, the importance of this training, and how the proposal project raised my awareness and will benefit the entire community.

Female Soccer Athlete Sustains Medial, Lateral, and High Ankle Sprain

Lucas Uphaus

Nora Ifft, Physical Education, Health & Recreation

Of various injuries sustained during sporting activities, ankle sprains are the most common, and of the injuries resulting in time loss, ankle sprains make up one-sixth of those (Nuhmani S, Khan, 2013). Sprains to the ATFL (anterior talo-fibular ligament) are the most frequently injured of all the lateral ligaments, the CFL (calcaneofibular ligament) is the second most sprained and the least sprained is the PTFL (posterior talofibular ligament) (Raina, S., & Nuhmani, 2014). Several factors can contribute to increased risk of ankle sprains including gender, with females being more predisposed, anthropometric variability and limb dominance, and muscle strength including evertors-invertor's strength and pro-activation of peroneal muscles (Raina, S., & Nuhmani, 2014). The study will cover the anatomy of the ankle complex, signs and symptoms, rehabilitation process, and current status of the athlete. The purpose of this case study is to evaluate a Division I Collegiate Female Soccer player who simultaneously sustained a medial, lateral, and high ankle sprain to her right ankle and to increase knowledge of this injury in the medical community.

The Story of Glen Canyon Dam

Mitchell Urlacher

Richard Orndorff, Geology

Glen Canyon Dam is located just south of the Utah-Arizona border near the city of Page, AZ. Construction began in April 1956 and was completed in September 1963. Cost of construction of the dam itself was \$135 million, but the entire cost including the power plant, roads, bridge, and facilities was \$272 million. Glen canyon Dam is a 710-foot-high concrete arch gravity dam. It varies in thickness from 300 feet at the base to 25 feet at the top, and the crest of the dam measures 1560 feet wide. It stands 583 feet above the Colorado River. Behind Glen Canyon Dam, 183-mile-long Lake Powell is the longest reservoir in the United States. Filling of Lake Powell to the desired capacity (lake surface elevation of 3,000 feet above sea level) took 17 years after construction finished. Power output by the dam has an upper limit of 1,300 megawatts, but in order to maintain riparian ecology downstream flow is withheld and power output is kept within 500-800 megawatts, all of which is sent south to Phoenix. In 1983 El Nino conditions produced very high spring snowfall. In late spring, warm temperatures and intense rainfall raised water levels of the reservoir within one inch of the mandatory evacuation level and eventual failure, illustrating the potential delicacy of such an immense and seemingly impenetrable concrete structure.

Analysis of Pharmaceutical and Polymer Mixtures for Identification of Individual Components

Aidee Vasquez

Peter Bilous, Chemistry & Biochemistry

Seized drugs or unknown powders are often received as evidence by forensic scientists for their analysis and identification. These samples usually consist of mixtures of different chemical compounds. The objective of this study was to identify the individual chemical components of samples composed of various polymers and/or pharmaceutical drugs using a Raman spectrometer. Raman spectroscopy is a rapid, sensitive, non-destructive and non-invasive technique used to identify chemical compounds. To identify the polymers and/or pharmaceuticals present in sample mixtures, a database of 27 pharmaceutical drugs and 97 organic polymers was first created using known standards. Sample mixtures were prepared using a combination of different pharmaceuticals and polymers. These samples were then examined using a stereomicroscope for their general microscopic characteristics. Individual particles of the mixture were then selected for further analysis and identification using a Raman spectrometer. The results of this study will be used to design a laboratory experiment that will give forensic science students training in the examination and analysis of samples mimicking crime scene evidence.

The Failure of Banqiao Dam, China: One of the Worst Disasters in World History

Yuanrong Wang

Richard Orndorff, Geology

With the help of Soviet consultants, the Chinese government built Banqiao Dam to control flood waters and generate electricity for Zhumadian City in Henan Province, China. Construction of Banqiao dam started in April 1951, and it was completed in June 1952. In August 1975, more than a year's average rain fell within 24 hours in Zhumadian City, and water levels rapidly rose far higher than the planned design capability behind all 62 dams in the area. Banqiao Dam and its neighbor Shimantan Dam were the two largest of these dams. The intense rainfall, caused by the collision of Typhoon Nina and a cold front, resulted in a flood (equivalent to a flood expected only once in a thousand years) that destroyed all dams in the province. The failures of Banqiao and Shimantan Dams are now considered the worst dam failure in human history. An estimated 171,000 people were killed by the flood, and 11 million people were displaced. 5,960,000 buildings were destroyed, and 302,300 draught animals were killed. Damage in the Zhumadian area was estimated to be CNY3.5 billion (US\$513 million).

Rainbow Trout (*Oncorhynchus mykiss*) Summer Habitat Utilization of Lake Spokane, Washington in Relation to Water Quality Parameters

Shawna Warehime

Paul Spruell, Biology

Dams influence water quality and available habitat leading to consequences for native fish species. The construction of Long Lake Dam in 1915 created the Lake Spokane Reservoir altering the ecosystem. As a condition of Federal Energy Regulatory Commission relicensing of dams, public utilities need to understand how a dam influences fish movement and habitat selection. My objective is to determine summer salmonid habitat utilization of triploid (infertile) rainbow trout (*Oncorhynchus mykiss*; RBT) in relation to temperature and dissolved O₂ (DO). I will tag twenty RBT with an internal acoustic transmitter using Low-Voltage Electroanesthesia. These transmitters contain sensors for temperature and depth providing a 3D location. The RBT will be released into Lake Spokane and tracked weekly (6/1/17-10/31/17) with a 600 RT-A receiver and directional hydrophone until location, temperature, and DO are pinpointed. Additional temperature and DO gradients of the reservoir will be provided by a public utility. These data will be used to create GIS maps and to run a presence-background model in the statistical program, R to determine whether fish movement is influenced by the water quality. The gradients where fish are located will be compared to gradients where they are not found to determine if there is a significant difference.

Forecasting Potential Gate Revenue for a Seattle NHL Franchise

Christopher Watkins

Kelley Cullen, Economics

Due to the choices and behaviors of professional sports franchises it is essential to understand the current climate of professional sports league expansion with regards to the National Hockey League, and how to predict or forecast future destinations based off of locational viability, more specifically, the Seattle market. It is important to understand what expansion implications arise from a city gaining a new team, and whether that city can produce and support a viable NHL franchise, and how introducing a new venue impacts the local economy of the potential city. This study goes on to investigate whether or not the NHL should expand, and if so, is Seattle, Washington a viable market to add another professional sports team. Moreover, can a new franchise in a hypothetical new location, based off of its locational statistics, produce an NHL franchise that can sustain long run economic success? Building upon the existing literature in sports economics starting with the seminal paper by Jones & Ferguson (1988) "Location & Survival in the NHL" and including Poplawski & O'Hara's (2014) "The Feasibility of Potential NHL Markets Under the new Collective Bargaining Agreement," this study will use data from the NHL, rival sports leagues such as the NBA, NFL or MLB, along with socioeconomic / demographic information specific to Seattle, Washington to calculate the potential long run costs and benefits of an NHL expansion team.

Hawk Creek's Winding Recession Based on Portable X-Ray Fluorescence

Lana Williamson

Chad Pritchard, Geology

Hawk Creek enters the Columbia River about 5-miles west of the confluence with the Spokane River and is a recreational destination. During the Pleistocene, thinly bedded clay deposits were deposited in glacial lake Columbia. Then eventually the ice dam holding water in glacial Lake Columbia discharged through Grand Coulee. Gravel layers in the area indicate that glacial Lake Columbia existed during the Missoula floods. The Hawk Creek inlet snakes around basalt outcrop that the creek and receding floodwaters were unable to cut through, therefore controlling the current water-path, including the waterfall. A plunge pool has formed at the base of the falls created by the force of falling water and rocks and turbulent eddies carved away at the finer-grained sediment. The rock surrounding the falls is confirmed to be the Grande Ronde

Basalt of the Columbia River Basalt Group based on x-ray fluorescence. The water's inability to cut through the stronger basalt forced the river to carve a curvy path through the rocks, and it's the recession and the plunge pool of the waterfall, a complex interaction of geology over the last 15 million years made the features we enjoy today.

Tales from the Garage: A Narrative Inquiry of Members at VetsGarage

James Wingo, Jennifer Andres

Susan Burwash, Occupational Therapy

In Spokane, in addition to the VA, veterans have access to a number of local and state organizations. One of them is VetsGarage, a nonprofit organization that offers psychological services and classes designed to help veterans reintegrate into a civilian role. Many of the classes are provided in VetsGarage large woodworking shop; here veterans can explore creative outlets by designing and constructing various projects. At VetsGarage, members are able to express themselves, free from the judgments of civilian culture. Military culture is drastically different from civilian culture and involves many terms, traditions, and ways of thinking that may not be familiar to health care workers. In order to better serve Spokane area veterans, it is paramount to explore and address the needs, experiences, and obstacles they face while rediscovering and reintegrating into civilian culture. Narrative inquiry is used to explore other's experiences and seeks to understand, enrich, and transform those experiences. Occupational therapists strive to treat patients in a holistic manner; this includes looking at their experiences over a lifetime. Narrative inquiry is a powerful tool to explore these lifetime experiences or life stories. Our narrative research highlights the lived experiences and occupations of veterans at VetsGarage. Through interviews, artifacts, and our lived experience we were able to obtain narratives of these incredible individuals. We hope that by sharing these stories and artifacts we can begin to bridge a cultural divide.

The Effect of Ethyl Alcohol on the Activity of β -galactosidase

Crystal Winter

Kenneth Raymond, Chemistry & Biochemistry

β -Galactosidase is an enzyme that catalyzes the hydrolysis of lactose to form glucose and galactose. It also combines galactose with alcohols to form β -galactosides. It is difficult to experimentally monitor the kinetics of Lactose hydrolysis so the substrate ONPG (*o*-nitrophenyl- β -galactopyranose), whose hydrolysis can be followed by UV/VIS, is used. Different alcohols influence the speed of the enzyme differently. Ethyl alcohol speeds PNP hydrolysis of β -galactosidase at low concentrations and slows it down at high concentrations. Dixon and Cornish-Bowden plots were used to infer that ethyl alcohol acts as a mixed inhibitor. The results of kinetic studies on ONPG hydrolysis and the effects of ethanol on this hydrolysis will be presented.

Range Testing Acoustic Receivers on Lake Roosevelt, Washington: Implications For Array Design and Fish Tracking

Bryan Witte

Paul Spruell, Biology

Assessing movement patterns provides information to guide management decisions in fisheries. One way this information can be gathered is with acoustic telemetry. Tagged fish are tracked with an acoustic receiver array in Lake Roosevelt, a 240 km impoundment of the Columbia River. To better understand tag detections in the array it is necessary to test detection ranges. My objective was to test detection ranges of individual receivers. I hypothesized that different depth categories would result in different detection frequencies because tagged fish have historically disappeared from the array in the summer months when they move into deeper water. In summer 2016 I tested 40 Vemco acoustic receivers on Lake Roosevelt. A transmitter (tag) was positioned at three points in four directions around each receiver and in three depth categories (five meters above bottom, midwater, and five meters below surface) for each point. The tag was at depth long enough for 20 transmissions. The number of detections divided by transmissions was the detection frequency. There was

no effect of depth on detection frequency ($F=0.43$, $df=2$, $p=0.63$). Detection frequencies were modeled with a generalized linear mixed model to map detection ranges with ARC Map to help inform the placement of additional receivers.

Neck Strength and the Incidence of Concussions in High School Athletes

Charles Woolley

Garth Babcock, Physical Education, Health & Recreation

Concussions are traumatic brain injuries that can occur at any level of play in almost any sport. In wrestling concussions are most prevalent when performing takedowns (Gessel et al. 2007). In addition, football and soccer athletes receive almost more concussions than any other type of injury (NCAA 2015 Report) Receiving a concussion affects the individual's mental and cognitive state, making it difficult for them to focus, balance, and concentrate without showing symptoms. According to an article from the International Journal of Athletic Therapy & Training neck strength can, in some capacity, lower the incidence of concussions in collegiate football players (Caswell 2011). However, there is a very limited amount of research done outside of collegiate football in relation to neck strength and concussions. This research study will measure the neck strength of high school athletes and monitor them throughout their season for a concussion. The purpose of this research is to look at a correlation, if any, between neck strength in high school athletes and the incidence of concussions.

Effects of Nail Polish on Accuracy of Pulse Oximetry Measurements

Kathryn Yaremko, Megan Chatellier

Megan Chatellier, Physical Therapy

Purpose/Hypothesis: Pulse oximeters are commonly used to non-invasively measure patients' percent of oxygen saturation (SpO₂) and heart rate (HR). The purpose of this study was to examine the effects of various nail color polish on the accuracy and error rates of pulse oximeter measurements. Subjects: A convenience sample of subjects without cardiopulmonary pathology from a university community in Eastern Washington. Materials/Methods: Nail polish colors were randomly assigned to digits on one experimental hand with the contralateral hand served as the control hand. The nail polish colors selected were red, pink, black, blue, and slate. Oximeters were placed on the experimental hand with the corresponding paired oximeter on the control hand. After 30 seconds, a photograph of both hands was taken to obtain simultaneous HR and SpO₂ readings, and a 15 second ECG strip was printed. Results: Using a paired t-test for the oximeter oxygen analysis and an ANOVA for the ECG and oximeter heart rate analysis a significant difference in SpO₂ was found for red and slate polish. No significant difference was found for HR measurements among the 5 polish colors. Conclusions: Clinically it may be beneficial to remove slate and red nail polish prior to obtaining fingertip oximetry measurements.

21 Year Old Collegiate Track Athlete with Osteitis Pubis

Lisa Young, Leah Straub, Iris Fiaui

Garth Babcock, Physical Education, Health & Recreation

Osteitis pubis is a chronic noninfectious inflammation of the pubic symphysis. The pubic symphysis is a movable joint that glides during trunk and lower extremity movements. There are attachment sites nearby that when the muscles contract, can pull and irritate the joint causing inflammation. The athlete presented in this case study will be a 21-year-old female Division I collegiate track athlete. The athlete continued to complain of pain deep in pelvic region. She was told to rest and received a cortisone shot, and later received a platelet-rich plasma injection (PRP). She responded well to the PRP injection and was cleared to return to practice.

Bi-lateral Tibial Stress Fractures Following Shin Splints in a 19 Year Old Collegiate Women's Basketball Player: A Case Report

Noah Ziemann

Garth Babcock, Physical Education, Health & Recreation

As the name suggests, a stress fracture is a small crack in any of the weight-bearing bones of the body. A Tibial stress fracture is a fortunately uncommon cause of leg pain in athletes, especially running athletes or those who participate in repetitive landing from a jump. Typically athletes complain of pain that increases over a period of time, usually in response to increased stress. The athlete in this case study is a 19-year-old female basketball player who first developed symptoms over 3 years before the condition was properly diagnosed. This athlete had previously been treated for shin splints and calf tightness using stretching exercises, sports massage, and modalities which did not solve the problem. She since has had a surgical Open Reduction Internal Fixation with an Intramedullary Rod procedure on her left tibia and is progressing well. The purpose of the case report is to describe the anatomy of Tibial Stress Fractures and the signs and symptoms pertaining to this condition. Also, the surgical procedure and rehabilitation used will be discussed. Providing a case report on this condition will assist athletic trainers become more knowledgeable and aware of a condition they may encounter in their profession.

Aging Policy Fair

Social Work Extenders in Whitman County

Gabriella Avakimian, Diana Chavira-Lopez, Magdalena Morado, Aimie Inthoulap, Zena Orozco,

Anna Tresidder, Health Services Administration

The social work extenders in Whitman County will focus on providing at home visits for independent, aging adults that are disabled and require care. Our focus is on patients who do not have primary access to healthcare facilities or public transportation. The social work extenders visit the homes of the elderly to teach and train them on how to better care for themselves. They provide attention to the elderly who are immobile and unable to take proper care of their health. The program tries to bring attention to what the patients have done previously and what they can do to not repeat the same mistakes. Then they construct a plan that will provide steps on what the patient should do in order to better their health. The social work extenders also provide them with the resources that can reduce their cost of living. This will give the patient the choice to self manage their expenses so that they can afford their other medical needs. We expect this program to help decrease the amount of cases of elderly who do not have the proper knowledge and resources to care for themselves in Whitman County. From this we hope to learn how to utilize social work extenders and their services to those who are eligible.

Steven's County Diabetes Management Program

Danielle Beltrame, Travis Fletcher, Jordan Roberts, Katrina Hilton, Eyerusalem McDowell

Anna Tresidder, Health Services Administration

Stevens county diabetes management program is designed to increase the Patient Activation Measure (PAM) © and reduce emergency department visits for seniors over the age of 60 with diabetes in Stevens County. This multi-pronged pilot program will include two anchor strategies: one, designed to increase PAM scores and reduce unnecessary emergency department utilization. Two, component and an individual coaching/home-visiting. This hybrid clinic/community approach will allow the program to catch people where they usually seek care (e.g. the clinic) and provide needed supports in the community that will help ease the burden on the medical system as a whole. Preventative home visits and group education will equip the individual to better self-manage his or her health and care. The outcomes of the diabetes management program will be designed to impact the following areas: one- 20% Improved (PAM) score & two-20% reduction unnecessary emergency department utilization. As improved PAM scores are predictive of improve health outcomes in the long run (Sacks et al, 2014), this metric will serve as a proxy that will allow us to evaluate progress during the 18-month program. Reductions in unnecessary emergency service utilization will result in better, more appropriate care for patients as well as reduced costs.

STOI Photovoice

Damen Diaz, Delaney Hodgins, Krystal Holloway-Overly, Blas Ortiz, Jessica Cruz

Anna Tresidder, Health Services Administration

Within the Spokane Tribe of Indians community, we are exploring home-based care allowing elderly individuals to remain in their own home. This can positively impact the likelihood of elderly following through long term treatment and care. The aging population within the Spokane Tribe of Indians community do not utilize the preventative health care that is provided because there is a gap in available services that are provided. Photo voice is a method that uses photographs to express the environment and experiences that people encounter within their daily lives. In order to demonstrate the safety and well-being of the elderly population living environments, we will use the photo voice technique to provide insight that illustrates elderly traditions and cultural values. We hope to learn the root causes of the elderly reluctance of not engaging in health wellness as well as the inherent challenges they face when remaining independent. Promoting home-care based

services will provide the elderly with a satisfying lifestyle to enjoy their remaining years within the comfort their own home.

The Evolution of Football Rules

Veronica Glanville

Chadron Hazelbaker, Interdisciplinary Studies

Football, as we know it, has changed significantly since its humble beginnings in 1892. In its early beginnings, football was an all-out brawl. The first football game was played in 1869. It was an intercollegiate contest between Rutgers and Princeton universities, but the game was played according to soccer rules modified from the London Football Association. During the next seven years, rugby gained popularity over soccer and modern football was launched from Rugby. In 1876, the Intercollegiate Football Association (IFA) was formed by Columbia, Princeton, Yale, and Harvard universities. IFA was dedicated to playing football according to rugby rules. Walter Camp, now known as the father of American football, helped establish many of the first rules and regulations of football. Over the next 25 years, the rules of the game changed and transformed the soccer-rugby mix into American football. The game itself has evolved from its early beginnings; thus, the rules of football had to evolve as well. Revisions to the rules have made football more fair, safer, and more entertaining-- all in the name of improving the game.

Our New Normal

Brittney L. Heimbigner

Daniel Ruddell, Gerontology

Dementia is a vast and strenuous subject. It doesn't have one dimension. It is a description of symptoms for several diseases. Dementia is not the same for every person and it is not always the same for every moment. This can influence all parties involved. I have worked with dementia residents for several years and have developed a passion for them. I want to help others understand how to cope with the emotional loss of a parent or grandparent. The adult child must learn to cope with the fact that their parent or grandparent in some ways may no longer resemble the person they grew up with. This is the new them and the new normal. My research will be to define dementia, learn about treatments, and to have a new sensible understanding how it affects the patients, as well as their family members. I want to help family to know what to expect and find new coping strategies. I will also define each stage of dementia. The research will include books, internet and interviews with families and caregivers. There are so many different sides of dementia, and each are vital but sometimes the family is forgotten. If the victim of dementia is going to have a better chance of surviving this disease, then the family must be involved with the process of coping and healing of their loved ones.

The Preparedness Of The American Employer For The Age Wave

Joe Jacobs

Daniel Ruddell, Gerontology

The focus of this project is to examine the preparedness of the American workplace/employer as the workforce continues to "age" in a historically unprecedented fashion. Advancements in healthcare and medicine, lifestyle changes and financial factors all play a part in older workers remaining active and employed. While investigating and reading literature on the topic (from sources such as Dr. Ken Dychtwald), I have not only gained an understanding as to why the Age Wave is occurring, but just how much of an impact it will continue to have on business and society in general. It can be surmised that everything from advertising to workplace safety to pay scale to government policy will be effected and examined as 2030 approaches. Survey data I have examined that was collected recently by the Society For Human Resource Management suggests that at this time a significant amount of human resources departments of U.S. companies do not have any measures in place to meet the needs of this workforce change. In fact, there is not even a uniform classification of what an "older worker" is among businesses. Without proper steps in place to assure a comfortable and equally

competitive and fair workplace with room for growth for older employees, businesses could potentially be under serving a large portion of their workers. Likewise, being able to utilize those workers to their greatest potential and taking advantage of the changes the Age Wave will make on the consumer demographic will yield great success for businesses able to capitalize on that knowledge. I chose this particular project because of the implications the aging workforce will have on the future of both myself and the population I hope to serve in a gerontology focused career.

Using Online Video to Measure Student Interest in Aging Studies

Cynthia Jewett

Sharon Bowland, Aging Studies

Focus: This past year I have worked as a graduate assistant in the Department of Aging Studies. As a society, we are living longer and the resources for older persons are limited. In an attempt to get more students interested in Aging studies, the Center for Aging has created a website and a survey for assessing student opinions on aging topics. The survey suggested that students were interested in working with older persons but appeared to be unaware of related potential career opportunities. According to several studies, YouTube videos can be one of the most effective methods for marketing to the Millennial population. I am creating a YouTube video and sharing it with ten classes outside of the social work department and using a pre- and post-test survey to identify changes in student interests after watching the video. The collection of results is in process and will be completed prior to May 17th, 2017. Creating more awareness about careers in aging and how students can participate in providing services for older persons will contribute to identifying optimal policies for ensuring enough young persons enter the field and thus to a stronger policy-making process.

DISENFRANCHISED GRIEF IN NDL'S IN ELDERLY AND AGING

Lucas Leek

Mary Ann Clute, Social Work

The terms bereavement, loss, and grief are frequently associated with the death of a loved one however prior to death, individuals experience many losses as they age. Many of these losses, such as the loss of physical abilities and the loss of independence for example, are seen as an expected progression of aging by society and one's social support system. Because the grief experienced with each of these losses is not socially recognized or supported the individual can feel isolated, can experience an increased level of emotions such as anger and helplessness, and can develop a more complicated grief response with each loss experienced. I will conduct an analysis of existing social services available for support in non-death loss (NDL's) in the elderly and aging, examine the necessary criteria for qualification to receive support and the effectiveness of support available in order to identify needed improvements in social services and policy to decrease disenfranchised grief experienced with NDL's in the elderly.

Remembering the Forgotten: An Intervention for Vietnam Veterans

Billie Milliken, Jaime Olguin

Amanda Reedy, Social Work

An evidence based practice process was used to identify the best available treatment for an adult male Vietnam veteran who reports Post Traumatic Stress Disorder Symptoms (PTSD), problems related to a substance use disorder, and signs of marital distress. Our research indicated that Couple Treatment for Alcohol Use Disorder and Posttraumatic Stress Disorder (CTAP) is the most promising intervention. CTAP will help the couple work through the effects of PTSD, improve the quality of the marriage, and lessen the frequency and impact of the veteran's drinking behavior. This poster will present the research process used, suggestions for evaluating the effectiveness of the intervention, and implications for treatment.

Error Correction in Older and Younger Adults

Sreenath Panchagnula

Danielle Sitzman, Psychology

Previous research suggests that prior knowledge plays an important role in error correction for younger adults. When younger adults have high levels of prior knowledge of a question, but answer that question incorrectly, they are more likely to correct that error on a later test than questions where they have little prior knowledge. Older adults tend to remember information consistent with their prior knowledge. Thus, when their prior knowledge is incorrect, they may have difficulty updating their memory to the correct information. Across several experiments, older and younger adults answered 120 general knowledge questions, rated their confidence in the accuracy of their response, were shown the correct answer, and were then asked to indicate their level of prior knowledge of a question. After either 6 minutes or 1 week, participants answered the same general knowledge questions. Follow up experiments explored whether, after a week, participants were able to remember their initial answer or if they forgot their initial answer and replaced that memory with the new correct information. Overall, both prior knowledge and memory for the initial incorrect response played a role in error correction.

"GiGi and Leonard Play One Last Time" Children's Book

Mackinzie Peterson

Ryan Parrey, Disability Studies & Universal Access

This illustrated children's book tells the story of Leonard and his best friend, Gigi. Through the story of Leonard's diagnosis, and death from cancer, the text addresses friendship and end-of-life issues. Importantly, the book is absent of parents. This work is intended to start conversations about illness and disability as well as to open up the possibility of self-determination for children navigating various diagnoses. This presentation will emphasize the challenges associated with knowledge translation, especially for children, while simultaneously communicating a more positive message about illness and disability.

Understanding the Mental, Physical and Financial Stresses on Family Care Providers

Robyn Pulliam

Daniel Ruddell, Gerontology

This year, more than 5 million Americans will be diagnosed with Alzheimer's disease or dementia. Alzheimer's is the 6th leading cause of death in the United States, and is the only disease in the top 10 that cannot be prevented, cured or even slowed. Those affected by dementia will need more and more care as the disease progresses. The vast majority of senior care is provided by family members, who are often unpaid informal care providers. Having loved ones at our side, particularly those suffering from dementia, is crucial. But, who cares for the caregivers? The physical, financial and emotional toll that family members face can be astronomical. And, caring for our most vulnerable often means not caring for ourselves. Millions of people, out of a sense of personal responsibility, care for older loved ones with physical or mental limitations. The stress of this responsibility can lead to severe headaches, insomnia, anxiety, and heart conditions. Caretakers of people with dementia can face five to fifteen years of this overwhelming stress. Many of these same caregivers feel lost and abandoned, with no knowledge of where to turn for help. They are not trained for this unexpected career. However, help may be on the way. Changes to Washington State's health care system, including new supports for caregivers, are now being demonstrated through the Medicaid Transformation Project (MTP), a new Medicaid waiver service between the Centers for Medicare and Medicaid Services and Washington State's Health Care Authority. New services through other leveraged resources. Hopefully, these new services will improve the quality of life for everyone involved.

Dementia with Alzheimer's

Debra Reynolds

Daniel Ruddell, Gerontology

In this poster abstract you will see five various stages of the progression of Dementia within the brain. Alzheimer's is the most common Dementia for the elderly. An estimated 5.4 million Americans of all ages have Alzheimer's disease. In 2016 of the 5.4 million Americans that have Alzheimer's, and estimated 5.2 million Americans are age 65 years of age or older. Early diagnoses mean it may allow a person with this disease to receive maximum benefits from available treatments. Taking care of your body in life can help reduce the risk of many diseases. There are seven significant risk factors that could prevent Alzheimer's. These risk factors are high blood pressure, smoking, and obesity. Other risk factors are lack of exercise, low education, depression and poor nutrition. Currently there is no cure for Alzheimer with dementia, but by early diagnoses, initial treatment and along with the newest technology and medications, can slow the process of this devastating disease. All the information in this poster presentation has been done by research on www.lilly.org www.alz.org www.dcs.org www.aegisliving.com and Dementia Specialist Quote Ronald Peterson. American Journal of Public Health, Neurodegenerative disease management, the American Journal of Geriatric Psychiatry and Journal of Gerontological Nursing.

Washington State's Health Home Program: Care Coordination Designed to Improve Health and Create Networks of Support for High Cost, High Risk Utilizers of the Healthcare System.

Laura Robinson

Yolanda Lovato, Social Work

Navigating the healthcare system can pose challenges for an aging resulting in fragmented delivery services and overutilizations of emergency and hospital services. The Health Homes program is a care coordination model that assists high risk and high cost clients to achieve better adherence to medication management, better health and wellness outcomes, and reducing cost at the state level for Medicaid beneficiaries. Clients are assigned a care coordinator, who provide support services, assistance in health action planning, navigation through systems and services, and connection to resources. This project focuses on presentation of qualitative data of client's experiences with the Health Homes program and a quantitative assessment of the cost benefits of this model. These results suggest that well-designed targeted care coordination services could reduce health care spending for patients with complex health care needs and reinforces the need for policy initiatives designed to support and sustain the program.

Lincoln County Technology Use in Healthcare

Bobby Taber, Cynthia Amaya, Jonathan Loomis, Danya Benlitifah

Anna Tresidder, Health Services Administration

Lincoln County Medical Hospital (LCMH) has utilized remote patients monitoring to increase patient's health and to improve the access of patients care. This program will reduce the cost per capita by using virtual technology interaction. The study will reveal cost reduction to the patients and medical organization. LCMH goal is to improve the health quality and coordination of services for seniors with chronic diseases and to provide better health care education to seniors and family members of better health management. The study includes individuals from the ages of 50 to 65 years of age. Research methods include improvement of health, monitoring patients to self-management of chronic disease and access to resident's healthcare within Lincoln County. This study will demonstrate the outcome of viable source for home healthcare. If this program does succeed, it maybe utilized within other rural communities. The outcome of the study will prove the benefit of medical technology used to benefit senior populations health.

Older Women and Multiple Experiences of Abuse over the Life Course

Karen Walker

Sharon Bowland, Social Work

The focus of this project involves examining the many experiences of older women who have had trauma as the result of past abuse. The project is aimed at discovering how these multiple experiences of abuse affect older women over the course of their lives and what is being done about this issue. I am currently in the process of researching this project by conducting a literature review and examining a case study. Choosing the study of older women impacted by experiencing trauma as a result of abuse over the life course has allowed me to discover that this type of abuse is not talked about and needs to be acknowledged. I will be looking into a trauma-informed approach and trauma-informed interventions with older women as a means of integrating knowledge about trauma, understanding the impact of abuse and trauma on women, while learning possible paths to recovery and healing. Through examining interpersonal domestic violence, childhood abuse, and sexual abuse, my findings with regards to policy-making and services include discovering what is happening as far as addressing this abuse and trauma, as well as why the multiple experiences of abuse by older women resulting in lifelong trauma are not being treated.

Health and Safety Improvements; Spokane Tribe of Indians

Vivian Wong, Shanael Payne, Andy Tudor, Nicole Rhoades

Anna Tresidder, Health Services Administration

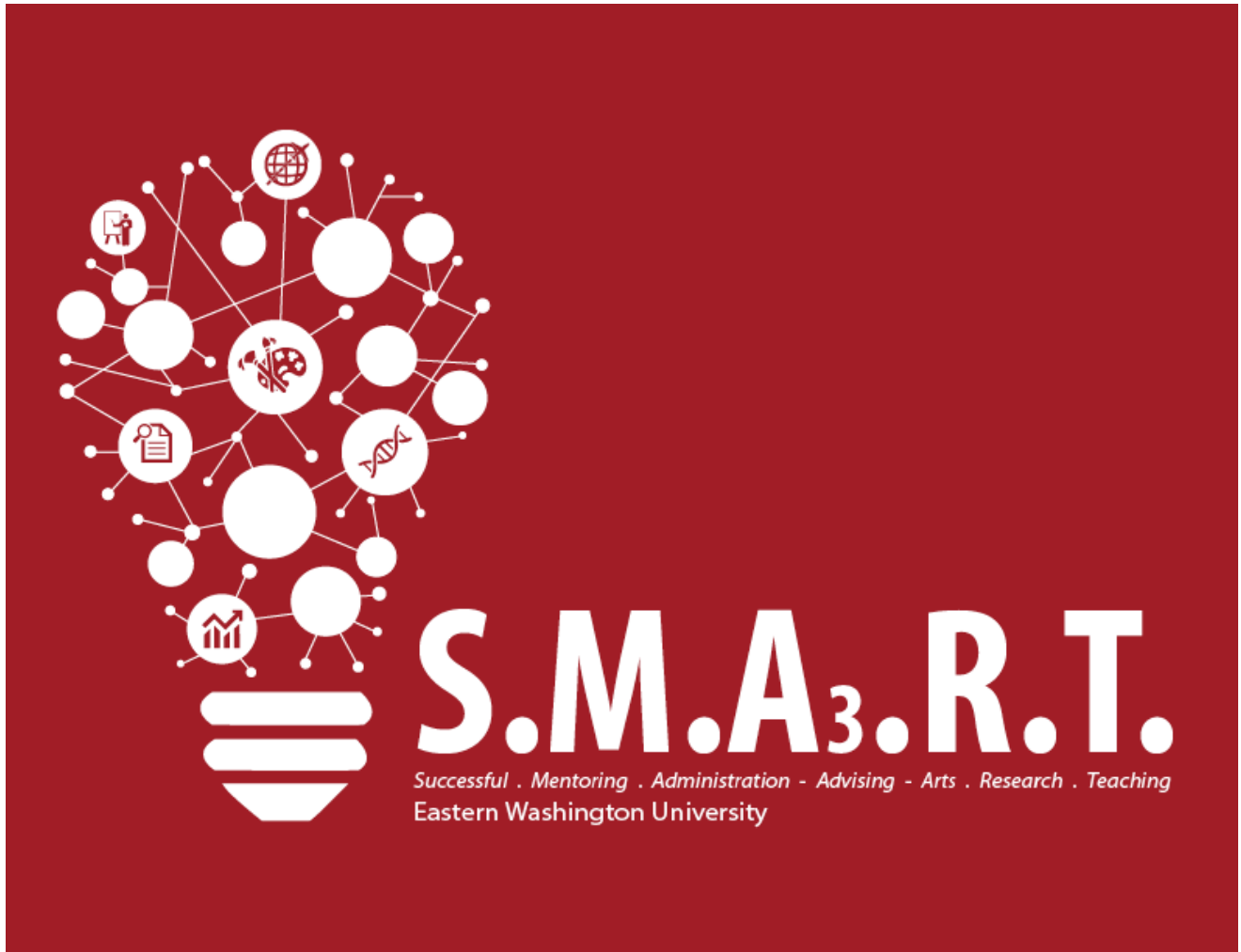
This project focuses on improving the health and safety of elders on the Spokane Indian Reservation. Located in a rural demographic, the members of the Spokane Tribe face challenges related to high poverty and unemployment rates. These rates lead to the lack of access to healthcare for the elderly, posing additional obstacles, and future threats for the provision of health safety and education. This study addresses mechanisms that are specifically tailored to the Tribe's culture in providing appropriate resources. Improvements will be made through one-on-one health coaching and health and safety education sessions. The one-on-one health coaching and education sessions will focus on building trust, communication, goal setting and the necessary actions to achieve these objectives. Various topics that are covered during education sessions include discussion of fall prevention, how to stay active, and safety issues. Alongside the discussion will be home modifications, assistive devices, and adaptive technology. Throughout the process elders will acquire essential tips and tools, while actively involving themselves with the local Senior Center and Health and Human Services (HHS). The ultimate goal of this research project is to find mechanisms in improving elder's access to healthcare services, self-dependence, and patient activation. The results will be measured by Patient Activation Measure (PAM) assessment.

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“The eye sees
only what the
mind is
prepared to
comprehend.”

-Robertson Davies, Tempest-Tost

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