

2016

2016 Student Research and Creative Works Symposium Program

Eastern Washington University

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19TH ANNUAL

EWU | Student Research and Creative Works

SYMPOSIUM

RESEARCH PRESENTATIONS: ORAL, POSTER, OR INTERACTIVE
CREATIVE WORKS: PERFORMING, VISUAL, OR LITERARY

MAY 16–18, 2016

OVER 500 PRESENTERS



MAY 16TH

**S.M.A.R.T. FACULTY &
STAFF POSTER SESSIONS**

HARGREAVES READING ROOM
4:30PM – 8PM

MAY 17TH

STUDENT CREATIVE WORKS

FINE ARTS COMPLEX
EWU CHENEY CAMPUS
4:30PM – 8PM

MAY 18TH

STUDENT RESEARCH

HARGREAVES HALL & SENIOR HALL
EWU CHENEY CAMPUS
8AM – 4PM

MAY 19TH

AGING POLICY FAIR

EWU SPOKANE CAMPUS
12:00 NOON – 2PM

YOUR FOCUS DETERMINES YOUR REALITY

–QUI-GON JINN (GEORGE LUCAS)



EASTERN
WASHINGTON UNIVERSITY

start something big

stcu



WASHINGTON STATE
OPPORTUNITY
SCHOLARSHIP



Eastern Washington University **SYMPOSIUM**

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Welcome to the Student Research and Creative Works Symposium

As Associate Vice Provost, I would like to welcome you to this year's symposium week. Here at Eastern Washington University, undergraduate 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 in to something 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 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 cursive script, appearing to read "C. Lopez".

Dr. Charles Lopez

Associate Vice Provost – High Impact Practices
Undergraduate Studies and Student Success

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.A³.R.T.

Monday MAY 16th, 2016

[4:30 p.m. – 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 17th, 2016

[4:30 p.m. – 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 Exhibits:** *Art Building, Gallery & Lobby*

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

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

6:00- 7:30 p.m. **Film Presentations:** *Radio-Television Building, Room 123*

6:00-7:00 p.m. **Theatre Presentations:** *University Theatre*

DAY THREE STUDENT RESEARCH

Wednesday May 18th, 2016

[8:00 a.m. – 5:00 p.m.]

Senior & Hargreaves Hall

- 7:30 a.m. **Presenter Check-In Begins:**
Senior Hall Entrance
- 8:00 a.m. – 3:00 p.m. **Information Tables:**
Senior Hall Lobby
- 8:00 a.m. – 12:00 p.m. **Morning Oral Presentations:**
Senior Hall Classrooms
- 8:30 a.m. – 12:00 p.m. **Morning Poster & Interactive Presentations:**
Hargreaves Reading Room
- 11:00 a.m. – 2:00 p.m. **Aging Policy Fair Posters:**
Senior Hall 2nd Floor Lounge

Luncheon & Keynote,

Pence Union Building, Multi-Purpose Room

- 12:00-1:30 p.m. Opening remarks from Dr. Chuck Lopez,
Associate Vice Provost, Undergraduate Studies and Student Success
- Introduction by Dr. Roy Sonema,
Dean of the College of Arts, Letters, & Education
- Keynote Address “Ce n'est pas un lightsaber” by Dr. Kevin Decker**

Senior & Hargreaves Hall

- 1:30 – 5:00 p.m. **Afternoon Oral Presentations:**
Senior Hall Classrooms
- 1:30 – 5:00 p.m. **Afternoon Poster and Interactive Presentations**
Hargreaves Reading Room



Aging Policy Fair

May 18th – Senior Hall Lounge

12:00 p.m. – 2:00 p.m.

&

May 19th - EWU Spokane Center (Phase I)

12:00 p.m. -2:00 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

2016 Inspiration Quote

“Your Focus Determines
Your Reality”

– *Qui-Gon Jinn/George Lucas*

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. This year the Symposium Planning Committee chose the quote above by George Lucas to exemplify this mission.

Since the original film release in 1977, the Star Wars franchise continues to inspire numerous creative works and research. Here at EWU, we encourage our students to break past barriers/limitations by placing them in the driver’s seat of their respective fields and handing them the keys. Each student is inspired to go as far as they can. The symposium provides an ideal venue for each participant to represent him/herself as someone who has excelled in their education, and as someone with a great deal of “focus.”

George Lucas is an American filmmaker and entrepreneur best known for the Star Wars and Indiana Jones franchise. His films have won numerous academy awards and have inspired generations of filmmakers, artists, and entertainers. Lucas is also known for his philanthropy with his involvement in the George Lucas Educational Foundation, Lucas Museum of Narrative Art, and various other charities.

Symposium Sponsors

EWU Office of the Provost, Undergraduate Studies, Spokane Teachers Credit Union, Washington State Opportunity Scholarship, EWU Graduate Studies, McNair Scholars Program, Grants & Research Development.

Special Thanks

President Dr. Mary Cullinan,

Interim Provost and Vice President for Academic Affairs Dr. Mary Ann Keogh Hoss,

Keynote & EWU Faculty Organization President Dr. Kevin Decker,

Dean of the College of Arts, Letters, & Education Dr. Roy Sonnema

University Graphics: Larry Conboy & Judy McMillan

Multi-Media Commons: Carl Combs & Staff

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Transportation Services:

Marketing & Communications: Theresa Conway,

Printing Services, Sound Production, Paint Shop.

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, and 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 115 Showalter Hall.**

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

Symposium Committee:

The mission of the EWU Student Research & Creative Works Symposium is to promote research, scholarship, and creativity done in partnership with faculty as a vital component of their higher education. Student, faculty, and administrators are invited to hear and discuss undergraduate and graduate creativity and scholarly work.

2016 Symposium Committee Members

1. **Drew Ayers**, *Assistant Professor of Theatre & Film*
2. **Helen Bergland**, *Faculty Support & Student Learning Assessment Coordinator, Undergraduate Studies*
3. **Sharon Bowland**, *Director, Masters of Social Work & Aging Studies*
4. **Daniel Castillo**, *Assistant Symposium Coordinator*
5. **Kevin Decker**, *Professor Philosophy and President of EWU Faculty Organization*
6. **Bryce R. Dressler**, *ASEWU Academic Affairs Representative*
7. **Cynthia Dukich**, *Assistant Director, McNair Scholar Program*
8. **Greg duMonthier**, *Department Chair, Associate Professor, Art*
9. **David Early**, *Director, Recreation Facilities*
10. **Dana Elder**, *Professor and Director of University Honors*
11. **Gail Forsgreen**, *Assistant Director, EWU Writers' Center*
12. **Ruth Galm**, *Executive Director, Office of Grant & Research Development*
13. **Christina Torres Garcia**, *Director, McNair Scholar Program*
14. **N.M. Awlad Hossain**, *Associate Professor, Engineering & Design*
15. **Ginelle Hustrulid**, *Assistant Professor, Visual Communication & Design*
16. **Jeffrey Johnson**, *Symposium Coordinator*
17. **Jonathan Johnson**, *Professor, Creative Writing*
18. **Sarah Keller**, *Professor, Anthropology*
19. **Chuck Lopez**, *Associate Vice Provost, Undergraduate Studies & Student Success*
20. **Travis Masingale**, *Assistant Professor, Visual Communication & Design*
21. **Jonathan Middleton**, *Associate Professor of Theory and Composition, Music*
22. **Suzanne Milton**, *Dean of Libraries, Reference & Instruction*
23. **Justin Otto**, *Social Sciences Librarian, Faculty Chair*
24. **Kristina Pflieger**, *Responder, EWU Writers' Center*
25. **Pete Porter**, *Chair and Associate Professor, Theatre & Film*
26. **Chris Robbins**, *Project Manager, Academic Advising*
27. **Gabby Ryan**, *Program Coordinator, EWU Office of Community Engagement*
28. **Julia Smith**, *Professor, Anthropology*
29. **Jeffrey Stafford**, *Professor, Communication*
30. **Emma Tibury**, *Symposium Student Public Relations & Marketing Consultant*
31. **Anna Tresidder**, *Assistant Professor of Health Service Administration*

Information Tables

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.

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.

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.



We Congratulate All 2016 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 and skills-building support.



2017-18 Application
Available January.

**Learn more at
waopportunityscholarship.org.**



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

Fostering Excellence and Inspiring Awesome



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. 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, 106 have earned master's degrees, and 42 are currently enrolled in graduate school. Of those 42 enrolled, 31 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

2015-2016 McNair Research Interns and Mentors

Alyssa Barton: Dr. James Manson

Jasmine Burns: Dr. Ron Gentle

Lisa Coyle: Dr. Charlie Cleanthous

Samantha De Abreu: Dr. Jamie Manson

Mariana Garcia: Dr. Martin Meraz Garcia

Alla Goleta: Dr. Jonathan Anderson

Yevgeniy Golubenko: Dr. Kayleen Islam Zwart

Anna Kravtsova: Dr. Kriztian Magori, and Dr. Frank Lynch

Ariel McMillan: Dr. Julia Smith

Virginia Morales: Dr. Elisha Facio

Diana Ocampo: Dr. Miguel Novella

Jessica Ochoa: Dr. Norma Cardenas

Raquel Ramos: Dr. Deanna Trella

Jose Razo: Dr. Martin Meraz Garcia

Moses Ssemakula: Dr. Sean Chabot

New McNair Scholars

Ashley Ellison: Dr. Susan Ruby

Ricardo Ely: Dr. Judd Case

Ella McCallidaine: Dr. Todd Hechtman

Edith Melendez: Dr. Christina Torres Garcia

Jennyfer Mesa: Dr. Dick Winchell

Donya Quarnstrom: Dr. Kelley Cullen

Audel Rosas: Dr. Majid Sharifi

Lidia Velasco: Dr. Michael Zukosky

Minerva Zayas: Dr. Jessica Willis

Key Note Speaker

12:00 p.m. – 1:30 p.m.

Ce n'est pas un lightsaber



Kevin Decker, PhD Department of Philosophy

Abstract

In 1928, René Magritte painted a common brown pipe and labelled it “Ceci nest pas un pipe”—“this is not a pipe.” He called this surrealist work “The Treachery of Images.” As scholars of many diverse disciplines at EWU, faculty and students are constantly asked to create and test theories about their objects of study—whether ideas, communities, bodies or rocks. But what would it look like to avoid the treachery of external images and look critically at something as the Romantics did—from the inside?

This will be a breakneck journey from the here and now to a galaxy far, far away in which we find out all the different ways in which a university liberal arts education can illuminate the worlds of *Star Wars*.

Biography

Kevin S. Decker has enjoyed teaching at EWU since 2005. He's the author of "Who is Who? The Philosophy of Doctor Who" and has written many chapters in books on philosophy and popular culture as well as journal articles on ethics, social theory and political philosophy. Decker has been published in *Inked* and *Wired* magazines and been interviewed by Reuters and the Australian Broadcasting Corporation. He is Professor of Philosophy, serves as EWU Faculty Organization President, and from an Einsteinian perspective, is just a fairly uncomplicated space-time process in a universe in which past, present and future are only stubborn illusions.

STUDENT CREATIVE WORKS SCHEDULE

Tuesday May 17th, 2016

[4:30 p.m. – 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

6:00- 7:30 p.m. Session 3: Digital Media Film

Radio-Television Building, Room 123

6:00 – 7:00 p.m. Session 4: Creative Writing (Oral Papers)

Art Building Room 206B

6:00 – 7:20 p.m. Session 5: Theatre

University Theatre

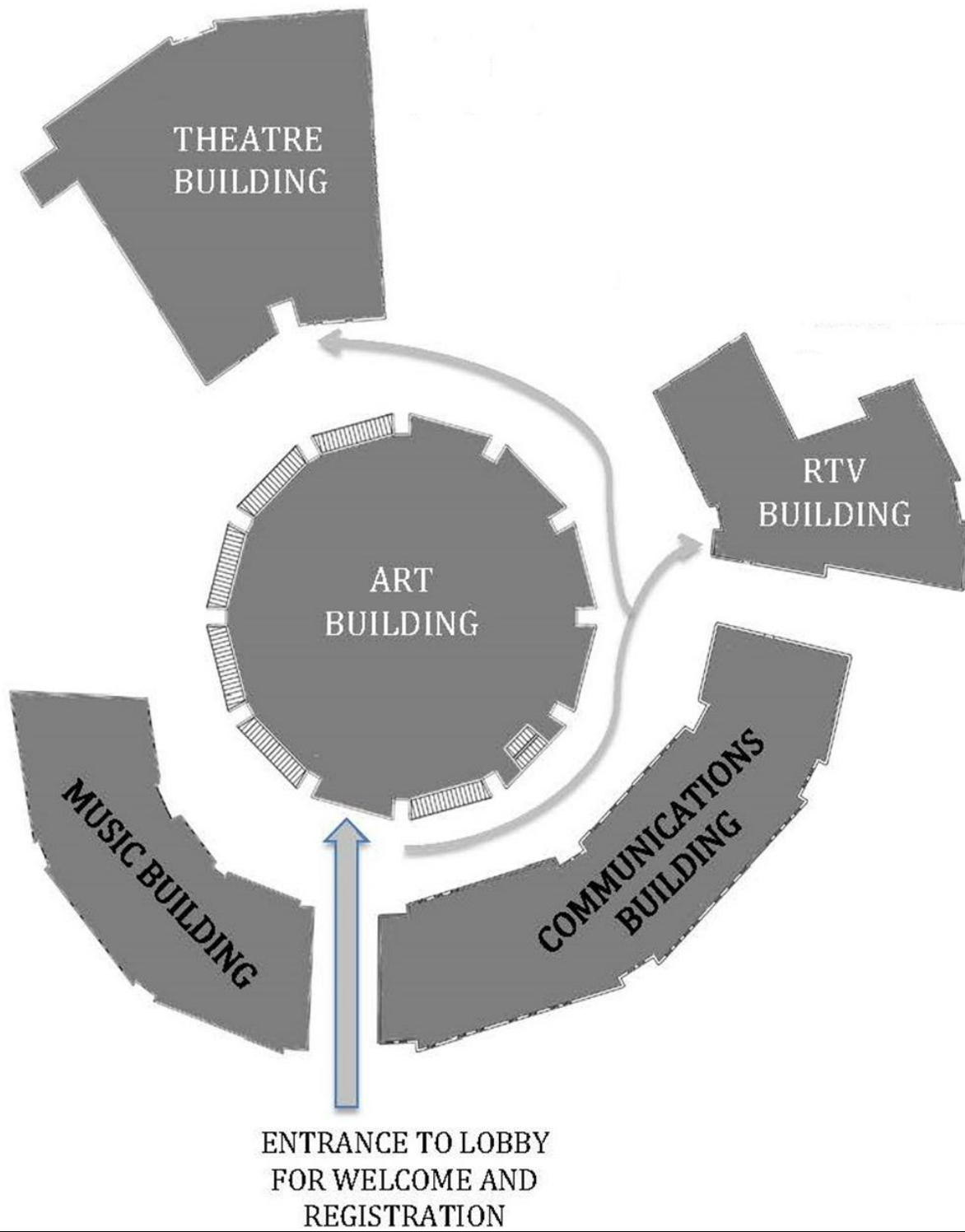
6:00 – 7:00 p.m. Session 6 : Creative Writing (Readings)

Art Building Auditorium Room 116

6:00- 7:00 p.m. Session 7: EWU Film

Radio-Television Building, Room 124

Fine Arts Complex Map



Creative Works Session 1: Art, Visual Communication & Design

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

Time	Artist	Title	Mentor
4:30 to 8:00	Jennifer Acevedo	<i>Everyday Things</i>	Jenny Hyde
	Rebecca Adams	<i>Nature and Process</i>	Jenny Hyde
	Jessica Brooks	<i>Waves</i>	Chris Tyllia
	Julie Francois	<i>Weaving Together Revealed</i>	Tom Askman
	Ashleigh Davidson	<i>Agony</i>	Jenny Hyde
	Kennan Gary	<i>Aura</i>	Jenny Hyde
	Michael Haynes	<i>Sgraffito Explorations</i>	Lisa Nappa
	Joe Kallman	<i>Iro-go</i>	Greg DuMonthier
	Jeremy Lenhartz	<i>Ceramic Vessels</i>	Lisa Nappa
	Shelby Rankin	<i>Pretty Little Drawings</i>	Greg duMonthier
	Laree Weaver	<i>Stripped</i>	Jenny Hyde
	Reece Webb	<i>Painting</i>	Tom Askman
	Kimberly Betzina	<i>Floral Branding Project</i>	Travis Masingale
	Ashley Tooke-Robinson	<i>Paint isnt Forevr</i>	Ginelle Hustrulid
Ashley Tooke-Robinson	<i>The Radium Girls</i>	Ginelle Hustrulid	

Creative Works Session 2: Music Composition

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

Time	Composer	Title	Mentor
5:20 to 6:00	Montgomery Boldt	<i>Ode to a Montana River</i>	Jonathan Middleton
	Jake Cunningham, Douglas Gade, William Boule, Jacob Johnson, Aaron McCullough, Tim Gales, Tim Zilar	<i>Guitar Ensemble – Aspiration</i>	Jonathan Middleton
	Margaret Francik	<i>Rescindment</i>	Jonathan Middleton
	Douglas Gade	<i>Plane and Simple</i>	Jonathan Middleton
	Gerrod Kroll	<i>Disorient</i>	Jonathan Middleton
	Lauren McKinley	<i>At Home</i>	Jonathan Middleton

Creative Works Session 3: Digital Media and Film

RTV Building, Room 123, 6:00—7:30 p.m.

Time	Author/Filmmaker	Title	Mentor
6:00	Lisa Talmud	Impressionist Photography	Ira Gardner (SFCC)
6:20	Havalah Moran, Diane Pippin, Denessa Hoskins, Amanda Harper, Kiefer Brown	Film Noir and Contemporary Photography	Ira Gardner (SFCC)
6:40	Charles Werneth, Kry Brown	“Downtown Ages”	Ira Gardner (SFCC)
8:00	Josias Navarro	Remix Theory	Travis Masingale
7:00	Josias Navarro	Experimental Videoing (untitled)	Eric Galey

Creative Works Session 4: Creative Writing

(Oral Papers)

Art Auditorium (Art 206B), 6:00 p.m.—7:00 p.m.

Time	Author	Title	Mentor
6:00	Charles Vaught Jr.	To Be a Viscera Technician	Polly Buckingham
6:20	Fira Hedlund	“Feminism is...”	Mimi Marinucci
6:40	Kristine Iredale	Poems on War and Terror	Anthony Flinn

Creative Works Session 5: Theatre

University Theatre Stage, 6:00 p.m.—8:00 p.m.

Time	Presenter	Title	Mentor
6:00 to 8:00	Hannah Bancroft	Stage Painting—Landscape	Shana Joslyn
	Leah Dach	Foliage	Shana Joslyn
	John Siebel	Cherry Blossom Scenery Piece	Shana Joslyn
	Mica Pointer	Trees and Textures: Scenic Painting Techniques	Shana Joslyn
	Elizabeth Lewis	Wisteria Final Project	Shana Joslyn
	Kyle Beckwith	Scenic Painting	Shana Joslyn
	Joseph Phipps	Theater Works	Sara Goff
	Dixie Sampson	<i>Love</i>	Sara Goff
	Madeline Dodge	10 Minute Autodrama	Sara Goff
	Warite Uke	Identity Struggle Autodrama	Sara Goff
	Carly Stewart, Jack Siebel	Carly—KCACTF Package	Sara Goff

Creative Works Session 6: Creative Writing

(Readings)

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

Time	Artist	Title	Mentor
6:00 to 8:00	Madeline Allen	Master's Thesis Selection	Rachel Toor
	Ariane Flos	"Happy Ending"	Rachel Toor
	Paige Harvey	"The Direction of Shitty Poetry"	Rachel Toor
	Jordan Estrellado	"The Agony of Mercy"	Rachel Toor
	Matthew Darjany	"Why Do We Have To Die?"	Rachel Toor
	Benjamin Gaynor	"Turtle Shell Mountain"	Rachel Toor
	Tori Harned	"The Way She Went"—A Prose Poem	Rachel Toor
	Rosalie Huff-Waters	"A Winter Day at Geiger"	Rachel Toor
	Timothy Lacey	"Southwest Wild Cock Season"—Prose Poem	Rachel Toor
	Marjorie Loosmore	"The Art of Failure"	Rachel Toor
	Lisa Laughlin	Exploring Memory in Creative Nonfiction	Rachel Toor
	Donna Parks	"The Death of the Goblin King"	Rachel Toor
	LaChell Randolph	"Her Last Day"	Rachel Toor
	Victoria Smartt	"My Dad The Samurai"	Rachel Toor
	Karla Wahl	"Hypochondria Must Be Hereditary"	Rachel Toor
	Kacy Tellessen	"Fractured"	Rachel Toor
Anthony Stillinger	"Libra"	Rachel Toor	

STUDENT RESEARCH SESSIONS

Wednesday May 18th, 2016

[8:00 a.m. – 5:00 p.m.]

Senior & Hargreaves Hall

- | | |
|--------------------------------|---|
| 8:00 a.m. – 12:00 p.m. | Morning Oral Sessions: 1-9
<i>Senior Hall Classrooms</i> |
| 10:00 a.m. – 12:00 p.m. | Morning Poster Session: 1
<i>Hargreaves Reading Room</i> |
| 12:00 p.m. – 2:00 p.m. | Aging Policy Fair Posters:
<i>Senior Hall 2nd Floor Lounge</i> |

Luncheon & Keynote,

Pence Union Building, Multi-Purpose Room

- | | |
|------------------------|--|
| 12:00-1:30 p.m. | Keynote Address “Ce n'est pas un lightsaber” by |
|------------------------|--|

Senior & Hargreaves Hall

- | | |
|------------------------------|---|
| 1:30 a.m. – 3:00 p.m. | Aging Policy Fair Posters:
<i>Senior Hall 2nd Floor Lounge</i> |
| 1:30 – 5:00 p.m. | Afternoon Oral Sessions: 10-18
<i>Senior Hall Classrooms</i> |
| 1:30 – 3:00 p.m. | Afternoon - Poster Session: 2
<i>Hargreaves Reading Room</i> |

Oral Session 1: Biology I

Room 101, 8:00 a.m.—12:00 p.m.

Time	Author	Title	Mentor
8:00	Bryan Witte	Preliminary Results from Range Testing Acoustic Receivers on Lake Roosevelt, Washington	Paul Spruell
8:20	Morgan Thomas	Impact of Intranasal Administration of Oxytocin on Symptoms of Post-Traumatic Stress, Reward Seeking Behavior, and Related Dopamine Signaling in Rats	David Daberkow
8:40	Renae Reed	Rage Against the Anthropocene: Salamanders Equipped with Plastic Antipredator Responses to Non-Native Fish	Ross Black
9:00	Adam Gilles	Diet Swap: Is Trading Native Prey for Invasive Species Impacting Predator Fitness?	Ross Black
9:20	Jenae Yri	Determining the Effects of Brook Stickleback (<i>Culaea inconstans</i>) Presence on the Turnbull National Wildlife Refuge, Cheney, WA	Joanna Matos
9:40	Cody Thomas	Long-term Effects of Burning, Herbicide, and Seed Addition on Invasive Annual Grasses at Turnbull National Wildlife Refuge in Eastern Washington	Rebecca Brown
10:00	Break		
10:20	Ashley Bromberg	Sources of excess nitrogen to Pine Draw watershed, Turnbull National Wildlife Refuge	Camille McNeely
10:40	Gwen Bode	An Analysis of Water Soluble Vitamin Content in Above and Below Ground Biomass of <i>Claytonia lanceolata</i> , a Wild-Foraged Food	Robin O'Quinn
11:00	Hawa Abdi	The Effect of Different Antioxidant Solutions on <i>Brassica rapa</i>	Camille McNeely
11:20	Leonard Simpson	Morphological Responses to Colchicine Induced Polyploidy in <i>Phaseolus vulgaris</i> L.	Robin O'Quinn
11:40	Ricardo Ely	A Re-Description of a Basal Deinonychosaur from the Early Maastrichtian of James Ross Island, Antarctica	Judd Case

Oral Session 2: Computer Science and Design

Room 124, 8:00 a.m.—9:20 a.m.

Time	Author	Title	Mentor
8:00	Josias Navarro	Remix Theory	Travis Masingale
8:20	Bobby Johnson	The Art of Simple Computers	Inoue Atsushi
8:40	Olin Anderson	Relaxed Mental State Detection Using the Emotiv EPOC and Adaptive Threshold Algorithms	Paul Schimpf
9:00	Benjamin Donnelly	A New Paradigm in Stored Password Security	Carol Taylor

Oral Session 3: Engineering

Room 124, 9:40 a.m.—12:00 p.m.

Time	Author	Title	Mentor
9:40	Terry Simmons	Input/Output Interface for FANUC Robot	Donald Richter
10:00	Ashley Mills	Tactility in a Robotic Gripper	Donald Richter
10:20	Branden Wong	3D Printed Robot Hand Gripper	Donald Richter
10:40	Bradley Dragt	Universal Balloon Gripper	Donald Richter
11:00	Shane Fisher	Finite Element Analysis to Optimize the Shot Peening of 7050 aluminum Using ANSYS	Awlad Hossain
11:20	Wayne Johnson	Rocket Propellant Research	Martin Weiser
11:40	Jose Anders	Source Separation from a Polyphonic Audio File by Using the EEMD-ICA Method	Min-Sung Koh

Oral Session 4: Race, Culture and Gender

Room 201, 8:00 a.m.—12:00 noon

Time	Author	Title	Mentor
8:00	Beanca Thai	I'm Not Going to Write You a Love Song	Elizabeth Kissling
8:20	Sophie Zaroyan	Master of None Masters Rape Culture: Using Comedy as Critique	Elizabeth Kissling
8:40	Minerva Zayas	Patriarchy Is in Everything: Women's Bodies, Indian Culture and How Morality Restricts	Mimi Marinucci
9:00	Minerva Zayas	Voice and Identity: How Religion Plays a Critical Role in Chicana Women's Lives	Jessica Wills
9:20	Alexis Griggs	Multiracial Feminism	Mimi Marinucci
9:40	Maria Briseida Rios	Research Design and Methodology in Race and Culture	Martin Meraz Garcia
10:00	Break		
10:20	Maria Briseida Rios	Dispelling Latino Stereotypes of Success	Martin Meraz Garcia
10:40	Edith Melendez	Developing a Support Center Without Borders: Enhancing Services for Students Without Documentation	Christina Torres-s Garcia
11:00	Rachel Giddings	Current Issues and Developments in Psychology with Regards to Latina/o Americans	Martin Meraz-Garcia
11:20	Ariel Mcmillan	Perceptions of Oppression: White Students of Eastern Washington University	Julia Smith
11:40	Christina Walden	IDEIA and SECTION 504: Special Education and Civil Rights Laws the Impact Students with Disabilities and Their Implications for Social Work Practice and Policy	Amanda Reedy

Oral Session 5: World Englishes & Cultures

Room 203, 8:00 a.m.—12:00 noon

Time	Author	Title	Mentor
8:00	Omnia Aloffii	Bilingualism and the Preservation of Heritage Language (HL) in Children of ELL Parents	Tracey McHenry
8:20	Aiko Nagabuchi	Peace Education in Japan & the U.S.: Where Do We Go From Here?	LaVona Reeves
8:40	Sony De Paula	Fostering Multi-Modality Literacy Through Art & Film	LaVona Reeves
9:00	Nichole La Torre	“Memories of the Silk Road”: A Travelogue	LaVona Reeves
9:20	Maria Estrada-Loehne	The Legacy of Language Choice Across Generations & Raising Bilingual Children: A Single Case Study	LaVona Reeves
9:40	Hamza Aljunaidalsayed	Effects of Technology Usage on Child English Language Learners	Tracey McHenry
10:00	Break		
10:20	Stan Pichinevskiy	Introducing English While Maintaining Russian as a Heritage Language: A Single Case Study	LaVona Reeves
10:40	Carli Guenther	Teaching English in Africa: An Auto-Ethnography	LaVona Reeves
11:00	Muhammad Alkhidhr	“Rhetorical Attunement” and Translingual Moves: An Auto-Ethnography	LaVona Reeves
11:20	Braik Aldoshan	The Father and the Orphan in Islam: An Auto-Ethnography	LaVona Reeves
11:40	Carol Anderson	Reflections on a “Battler” Aussie Mother’s Love: A Lesson in Resilience	LaVona Reeves

Oral Session 6: English I

Room 204, 8:00 a.m.—12:00 noon

Time	Author	Title	Mentor
8:00	Virginia Thomas	Sharing Power: Involving Students in Grading	Justin Young
8:20	Christopher Grim	It's Too Late: Marshall McLuhan's Predictions and Sherry Turkle's Observations of American Culture Within the Information Age	Dana Elder
8:40	Hayden Griffith	Latino Labels	Kyle Thiele
9:00	Elizabeth Matresse	Exploring Methodologies in Feminist Rhetoric	Lynn Briggs
9:20	Lydia Mulligan	Feminine Voices of Confession in Creative Nonfiction and Young Adult Literature	Rachel Toor
9:40	Michael Williams	"Pinball in Purgatory"	Rachel Toor
10:00	Break		
10:20	Danielle Weeks	Re-Examining Tropes of Sexual Violence in Fantasy Fiction	Rachel Toor
10:40	Kenna Herdrich	Warning: Graphic Content	Ryan Simmons (SFCC)
11:00	Nahla Hoballah	Voice in Writing: Going from Expressionistic to Social-Epistemic Rhetoric	Justin Young
11:20	Leah Butterwick	Differentiation: A Plan and Argument for Its Application in College Composition Classrooms	Justin Young
11:40	Lauren Hohle	Questioning Critique: Bias in Peer Review	Justin Young

Oral Session 7: Psychology

Room 221, 8:20 a.m.—9:40 a.m.

Time	Author	Title	Mentor
8:20	Chloe Pedersen	“Professor, could you do me a favor?” Differing Student Expectations of Professors Based on Gender	Amani El-Alayli
8:40	Anthony Leggett	Life Experiences Related to Student Success	Theresa Martin
9:00	Erika Ruppelius	Flirtation Styles and Tactics Among College Students	Theresa Martin
9:20	Alyx Christophe	Gender and Sexual Conformity	Theresa Martin
9:40	Mitchell Koonz	Workplace Romance	Theresa Martins

Oral Session 8: Anthropology and Economics

Room 221, 10:00 a.m.—12:00 noon

Time	Author	Title	Mentor
10:00	Seth DeNardi	The Pay-Performance Connection for CEOs in the U.S. Pharmaceutical Industry: A Statistical Sensitivity Analysis	Shelley Fan Kelley Cullen
10:20		Break	
10:40	Jessica Ochoa	Investigating Critical insights: How Mothers of Mexican Descent Expose Gaps in Dominant Approaches of Promoting Healthier	Elisa Facio
11:00	Katarina Wasley	Dental Fluorosis and Fluoride in Consumable Products	Sarah Keller
11:20	Olivia Manusia	Moral/Ethical Choices in the Post-Apocalyptic World of “Fallout 4”	Julia Smith
11:40	Justin Felts	Gaming and Language Education	Michael Zukosky

Oral Session 9: Chicano Education

Room 243, 8:00 a.m.—12:00 noon

Time	Author	Title	Mentor
8:00	Ashley Gordon	Latina/os and Mental Health	Martin Meraz Garcia
8:20	Austin Schulz	The Economy and Mexican Immigrants	Martin Meraz Garcia
8:40	Amelia Byrd	Chicano Immigrants' Role in the Economy	Martin Meraz Garcia
9:00	Kayleb Hall	Latino/Chicano Immigration	Martin Meraz Garcia
9:20	Teddy Mead	Latino Immigration to America	Martin Meraz Garcia
9:40	Jennifer Rogers	Anchor Babies	Martin Meraz Garcia
10:00	Break		
10:20	Vanessa Murillo	Latino/as in the Labor Work Force	Martin Meraz Garcia
10:40	William Paaga	The Voting Rights Act of 1965 & Latina/o Voter Registration	Martin Meraz Garcia
11:00	Theresa Bendito	Underrepresentation of Latino/as in Politics	Martin Meraz Garcia
11:20	Sami Zontek	Hispanics in the U.S. Labor Market	Martin Meraz Garcia
11:40	Taylor Newquist	Understanding U.S. Racial Tensions in the 21st Century	Martin Meraz Garcia

Oral Session 10: English II

Room 101, 1:30 p.m.—4:20 p.m.

Time	Author	Title	Mentor
1:30	Charlene Shepard	Feminism and Challenging Gender Roles in Charlotte Bronte's "Shirley"	Beth Torgerson
1:50	Aubra Godwin	Redefining History and Identity Through Toni Morrison's <i>White Girl in Beloved</i>	Paul Lindholdt
2:10	Anna Welch	A Narrative of Ecocentrism: "A White Heron" by Sarah Orne Jewett	Paul Lindholdt
2:30	Charles Vaught Jr.	Rebels from the Waist Down: An Exploration of Sex and Love in <i>1984</i>	Beth Torgerson
2:50	Break		
3:00	Laura Lango	The Ghosts of Colonialism: Examining Representations of Spirits in Post-Colonial Texts	Beth Torgerson
3:20	Ashtyn Prudden	Ursula LeGuin's <i>The Lathe of Heaven: A Parable for the Twenty-First Century</i>	Paul Lindholdt
3:40	Atanas Petrov	Childhood in a Semi-Secluded Society	Paul Lindholdt
4:00	Jaelyn Archer	Actions Speak Louder than Words: The Capitulations of Charlotte Bronte's <i>Jane Eyre</i> , and How Anne Bronte Used Satire to Craft a Superior Feminist Hero	Beth Torgerson

Oral Session 11: Philosophy

Room 124, 1:30 p.m.—2:30 p.m.

Time	Author	Title	Mentor
1:30	David Collins	The Existential Ennui of “Rick and Morty”: Using Wubba Lubba Dub Dub as a Starting Point for Philosophical Inquiry	Christopher Kirby
1:50	Corey Horn	Deadpool: Hero or Reckless Vigilante	Kevin Decker
2:10	Devon Young	An Argument for the Existence of God from Consciousness	Kevin Decker

Oral Session 12: Physical Therapy and Physical Education

Room 124, 2:40 p.m.—4:20 p.m.

2:40	Cliff Bonnell-Jones	Optimal Cueing Strategy for Lumbar Multifidus Activation Measured by Ultrasound Imaging	Patricia Nelson
3:00	Ryan Houser	Safety Voice for Ergonomics: Methodology of a Randomized Control Trial	Daniel Anton
3:20	Keisha Engley	Spokane Regional Health District Food Consumption Study at Spokane Public Schools (SPS)	Jeni McNeal
3:40	Kendell Erickson	Do Amount and Medium of Nutrition Education Affect Athlete Nutrition Knowledge in Big Sky Conference Athletes	Garth Babcock
4:00	Alexa Haberlack	Pressure Felt by Collegiate Athletes to Return to Play; Differences Between the Collegiate Divisions	Garth Babcock

Oral Session 13: Government and International Affairs

Room 201, 1:30 p.m.—5:00 p.m.

Time	Author	Title	Mentor
1:30	Kenton Bell	Modes of Production and the Political Revolution: What Bernie Sanders Means for the Declining American Worker	Majid Sharifi
1:50	I'sabeau Bozanich	Executive Power: Cold War Era & Post-9/11	Majid Sharifi
2:10	Emily Coblentz	The Link Between Israeli Border Policy and Palestinian Poverty: Politics of Apartheid	Majid Sharifi
2:30	David Broussard	Diminishing Returns: The Loss of the Saudi Oil Tool and Its Impact on Regional Power and Politics	Kristin Edquist
2:50	Break		
3:00	Egan Hiatt	Kiev vs. Moscow: Economic Combat Between Russia and Ukraine	Kristin Edquist
3:20	Jennifer Sacco	The Greece Financial Crisis	Kristin Edquist
3:40	Johneil Paul Espora	China and the AIIB vs. Japan and the ADB	Kristin Edquist
4:00	Wade Hampton	China's Currency Devaluation: A Case Study of the Controlled Yuan Exchange	Kristin Edquist
4:20	Brooke Erickson	Iran Nuclear Proliferation: Preventable or Political?	Majid Sharifi
4:40	Victoria Polanco-Harper	Sidewalk Spielbergs: Panopticon Police State and Superior Protection	Matthew Hodgson

Oral Session 14: Humanities: Film, Music, and Modern Languages

Room 203, 1:30 p.m.—2:30 p.m.

Time	Author	Title	Mentor
1:30	Rashad Tyson	Steamboat Willie: A Brief Scope of Synchronized Sound and Bestial Ambivalence	Drew Ayers Pete Porter
1:50	Charles Green	Teacher Perceptions of Nature, Existence, and Relevance of Music Technology Programs in U.S. Public High Schools	Sheila Woodward
2:10	Diana Ocampo	Attitudes and Motivations of Spanish Heritage Speakers	Miguel Novellan

Oral Session 15: Communication Studies

Room 203, 2:30 p.m.—3:10 p.m.

Time	Author	Title	Mentor
2:30	Brian Trabun	What We <u>Think</u> Is What We Get: Effects of Negative Attitudes Toward Aging on Our Health	Heather Robinson
2:50	Amanda Gonzales	Education, Technology and the Older Adult	Heather Robinson
3:10	Coral Wonderly	Health Care Access Disparities Within Spokane County, WA	Sharon Bowland

Oral Session 16: Math, Geography, Geology, and Chemistry/Biochemistry

Room 204, 1:30 p.m.—3:20 p.m.

Time	Author	Title	Mentor
1:30	Breeanna Page	Momentum Term for the Modified Spectral Projected Subgradient Method (MSPS)	Frank Lynch
1:50	Drew Adams	Campus Accessibility Application	Stacy Warren
2:10	Drew Adams	Three Dimensional Modeling of Paleochannels of the West Plains	Chad Pritchard
2:30	Break		
2:40	Joshua Barker	The Conversion of Potassium Organotrifluoroborates to Organoborohydrides: Gaining Access to New Reducing Agents	Eric Abbey
3:00	Tari Dunlap	Developing a Real-World Drug Analysis Experiment for Forensic Science Students	Peter Bilous

Oral Session 17: History and Art History

Room 221, 1:30 p.m.—4:20 p.m.

Time	Author	Title	Mentor
1:30	Remelisa Cullitan	Copy, Paste, Repeat: The Appeal and the Appall of Appropriation	Barbara Miller
1:50	Heidi Allred	Repatriating Stolen Antiques: Should Looted Antiques Be Returned to Their Country of Origin?	Barbara Miller
2:10	Michael Haynes	Self-Portraits of Rembrandt van Rijn	Barbara Miller
2:30	Dana Rowland	Earthly Artworks	Barbara Miller
2:50	Break		
3:00	Mica Pointer	Alexander the Great and Aristotle's Philosopher King	Georgia Bazemore
3:20	Rochelle Mullin	Cruel Captivity: Americans Held Prisoner During the American Revolution	J. William T. Youngs
3:40	David Collins	Jay Fox: The Life and Times of an American Radical	Joseph Lenti
4:00	Dulce Gutierrez Vasquez & Amanda Marie Mell	Rewriting the Narrative: The Rise And Effects of Marginalized Communities In Traditionally White Roles	Norma Cardenas

Oral Session 18: Chicano Education II

Room 243, 1:30 p.m.—5:00 p.m.

Time	Author	Title	Mentor
1:30	Cristina Gutierrez	Deaf Chicanos	Martin Meraz Garcia
1:50	Kaisha Sanchez	Underrepresentation of Latina/os in the Medical Field	Martin Meraz Garcia
2:10	Edwin Sanchez	Latino/as in the U.S. Media	Martin Meraz Garcia
2:30	Alexandra Romjue	American Dream v. Reality	Martin Meraz Garcia
2:50	Break		
3:00	Hope Jackson-Doney	Defining America: Chicano/Latino Influence	Martin Meraz Garcia
3:20	Destiny Vaught	The Necessity of Minority Ethnic Studies in the American Education Curriculum	Martin Meraz Garcia
3:40	Jose Razo	Motivations for Academic Achievement from Latina/o Undergraduates	Martin Meraz Garcia
4:00	Tanya Esquivel	Dual Language Programs in the U.S.	Martin Meraz Garcia
4:20	Megan Lee	Latina/o Education and Its Effects on Overall Job Success	Martin Meraz Garcia
4:40	Virginia Morales	La APPO: "Social Activism in Oaxaca"	Elisa Facio

Aging Policy Fair

(Poster Session)

Senior Hall, 2nd Floor Lounge
12:00 p.m. – 2:00 p.m.

Presenters will be available to discuss their posters during each session

Presenter(s)	Title	Mentor(s)
Sarah Baune	An Aging America: Prevalence, Implications, and Solutions	Henry-York Steiner
Carmen Candelaria	The Prevention of Elder Financial Exploitation	Sharon Bowland
Erin Daniels	Gambling Addiction and Impulse Control in Parkinson's Patients	Sharon Bowland
Erin Daniels	LGBTQ Disparities in Spokane	Sharon Bowland
Megan Dicken	Caregiver Challenges and Supports	Sharon Bowland
Andrea Hesler	Positive Effects of Art Therapy and Its Need in Senior Assisted-Living in Spokane County	Sharon Bowland
Kimberly Le	Sexuality & Dementia in Long Term Care	Sharon Bowland
Virginia Parker	Trauma Informed Responses for Residents in Long Term Care Facilities	Sharon Bowland
Carina Silva	Looking for Our Grandparents	Sharon Bowland
Shelli Speranzi	Ableism and Ageism in Dementia Care	Sharon Bowland
Michelle Wasco	Keeping Elders at Home Through Patient Activation	Anna Tresidder
Ayani Woge	Older African-American Women: Finding Safety in a Landscape of Trauma	Sharon Bowland

Poster Sessions

Hargreaves Hall, 2nd Floor Reading Room
Morning Session 1: 10:30 a.m.--12:00 noon
Afternoon Session 2: 1:30 p.m.--3:00 p.m.

Presenters will be available to discuss their posters during each session

Poster #	Presenter(s)	Title	Mentor(s)
Morning 10:30-12:00			
1A. Chemistry and Biochemistry	Kelly Sandall	Henry's Law Constant Determination Through FT-IR Spectroscopy	Anthony Masiello
1B. Chemistry and Biochemistry	Jonathan Smith	Vapor Pressure Determination Using Infrared Spectroscopy	Anthony Masiello
1C. Chemistry and Biochemistry	Mark Bronson	The High Resolution Infrared Analysis of Allene	Anthony Masiello
2A. Chemistry and Biochemistry	Kandise Holcomb, Caitlin April	Characterization of Glutamic Acid 22ITPase Mutants	Nicholas Burgis
2B. Chemistry and Biochemistry	Haily Beal	Synthesis and Hydricity of Organoborohydrides	Eric Abbey
2C. Chemistry and Biochemistry	Allyson Lesesne	The Quantitative Analysis of Acetaminophen in Children's Liquid Pain Relief Medicines by Cyclic Voltammetry (CV)	Wes Steiner
3A. Chemistry and Biochemistry	Kaitlyn Sutcliffe	The Analysis of Carbonate in an Unknown Standard by a Non-Conventional Weak Base Titration	Wes Steiner
3B. Chemistry and Biochemistry	Chelsea Witter	The Analysis of Iron in a Metal-Ligand Complex by Molecular Absorption Spectroscopy (MAS)	Wes Steiner
3C. Chemistry and Biochemistry	Koryne Plaskett	The Determination of Cobalt-(II) and Chromium-(III) Mixture by Ultraviolet-Visible Absorption Spectroscopy	Wes Steiner
4A. Chemistry and Biochemistry	Apostolos Toompas	Characterization of the Orthorhombic Polymorph of NiCl ₂ (pyz) ₂	Jamie Manson

Poster #	Presenter	Title	Mentor
Session 1 cont.			
4B. Chemistry and Biochemistry	Samantha De Abreu	Tuning Single-Ion Anisotropy in Molecular Ni(II) Coordination Complexes Containing Imidazole and Pyrazole Ligand Types	Jamie Manson
4C. Chemistry and Biochemistry	Daniella Jasen	Synthesis of Novel Cu ²⁺ Complexes with Substituted Pyrimidines	Jamie Manson
5A. Chemistry and Biochemistry	Alyssa Barton	Variation of Magnetic Dimensionality in Copper (II) Pyrazine Coordination Polymers	Jamie Manson
5B. Chemistry and Biochemistry	Abigail Smith	Comparisons of Structure and Magnetism in MCl ₂ (urea) _y and Substituted Urea Derivative Analogs	Jamie Manson
5C. Chemistry and Biochemistry	Robert Rosenthal	Synthesis and Characterization of Boron Containing Heterocycles	Ashley Lamm
6A. Physical Education, Health & Recreation	Angel Cruz	The Man Who Saved Baseball	Chadron Hazelbaker
6B. Physical Education, Health & Recreation	Andrew Gogi	Jack Johnson	Chadron Hazelbaker
6C. Physical Education, Health & Recreation	Isabel Burrows	Jack Roosevelt “Jackie” Robinson: How Faith and Family Built the Legend in Major League Baseball	Chadron Hazelbaker
7A. Physical Education, Health & Recreation	Bryan Anderson	The Social and Academic Benefits of Wilderness Based Orientation Programming	Jeremy Jostad
7B. Physical Education, Health & Recreation	Ryan de Coup-Crank, Brian Kinder, Nick White Craig Gustafson, Matthew Johnson, Jordan Slemmons, Chester Jolly	Accuracy of Fitbit Surge Heart Rate Versus a Polar FT1 Heart Rate Monitor	Wendy Repovich
7C. Physical Education, Health & Recreation	Kara Kracher, Nicole Holliday	Comparison of Wrist Worn Activity Trackers, Cell Phones, and Pedometers on Step Counts in Adults	Nate Lawton, Annika Vahk
8A. Physical Education, Health & Recreation	Samantha Braman	Obstacle Course: An Aggressive Twist to Traditional Running	Chadron Hazelbaker
8B. Physical Education, Health & Recreation	Charles Woolley, Shawna San Nicholas, Noah Ziemann	21 Year Old Female Collegiate Volleyball Player with Ankle Laxity	Parry Gerber

Poster #	Presenter	Title	Mentor
Session 1 cont.			
8C. Physical Education, Health & Recreation	Kayla Clauson, Naomi Eastland, Destinee Thomas	16 Year Old Female High School Athlete with Femoral Acetabular Impingement Syndrome	Garth Babcock
9A. Physical Education, Health & Recreation	Andrew Cheney, Kendell Erickson, Sarah Gaston, Madeline Elliott	Case Study of 19 Year Old Women's Soccer Player with Cellulitis	Garth Babcock
9B. Physical Education, Health & Recreation	Mike Ballasch	22 Year Old Collegiate Football Player with a Jones Fracture	Parry Gerber
9C. Physical Education, Health & Recreation	Noah Dorr, Reece Hayes	Indirect Inguinal Hernia Repair on a 19 Year Old Male Football Player	Garth Babcock, Parry Gerber
10A. Physical Education, Health & Recreation	Carli Robbins, Joe Cordes, Keira Lathrop, Jayme Schaefer	Case Study of a 22-Year-Old Female Collegiate Track Athlete with Compartment Syndrome of the Lower Leg	Parry Gerber, Garth Babcock
10B. Physical Education, Health & Recreation	Olivia Frangos	21 Year Old Collegiate Long Jumper with Illiopsoas Tendinopathy	Garth Babcock
10C. Physical Education, Health & Recreation	Hannah Gates	20 Year Old Division I Basketball Athlete with PFO and Associated Migraines	Garth Babcock, Parry Gerber
11A. Physical Education, Health & Recreation	Jessica Weise	18 Year Old Male High School Athlete with Hypertrophic Cardiomyopathy	Parry Gerber
11B. Physical Education, Health & Recreation	Leah Straub, Lisa Young, Dallas Challey	18 Year Old Collegiate Male Basketball Player with a Labral Tear, Acetabular Ossification, and Femoral Acetabular Impingement	Parry Gerber
11C. Urban & Regional Planning	John Chatburn	Green Infrastructure Concepts: Spokane's South Hill	Kerry Brooks
12A. Urban & Regional Planning	Amy Hilland	The Potential for Green Infrastructure in the University District of Spokane, WA	Kerry Brooks
12B. Geology	Lucas Evert	Landslide at Steamboat Rock	Chad Pritchard
12C. Geology	Jessica Blackwood	Rock Lake: Columbia River Basalt Group	Chad Pritchard
13A. Geology	Elijah Hansen, Justin Schneider	Geochemistry of Pre-Miocene Sedimentary Rocks of Eastern Washington Using Portable XRF	Chad Pritchard

Poster #	Presenter	Title	Mentor
Session 1 cont.			
13B. Geology	Eric Larson	Petrology of a Section of Drill Core at the Contact Between Stillwater Cumulates and Banded Iron Formation, Montana	Jennifer Thomson
13C. Geology	M. Christopher Jenkins	Enigmatic Amphibolite Located North of the Stillwater Complex, Montana	Jennifer Thomson
14A. Geology	Cassandra Hennings	The Origin of Xenoliths with Cumulus Textures Found Above the Subsurface Extension of the Stillwater Complex, Montana	Jennifer Thomson
14B. Geology	Duc Nguyen, Brea Lund	Comparative Geotechnical Analysis of Mount Mazama Ash and Bentonite Clay	Richard Orndorff
14C. Geology	Riley Snyder, Kaila Savage, Justin Blank, Lourdes Garcia	Influence of Mt. Mazama Volcanic Ash on the Optimal Water Content for Compaction of a Soil from a Residential Development in Cheney, WA	Richard Orndorff
15A. Geology	Drake Martin, Brandon Kautzman, Justin Schneider	Influence of Mazama Ash on the Unconfined Compressive Strength of a Soil from a Residential Development in Cheney, WA	Richard Orndorff
15B. Geology	Cassandra Hennings, Justin Luppens	Geotechnical Analysis of the Impacts of Mazama Ash (5677 BC) on the California Bearing Ration (CBR) of Soil from a Residential Construction Site in Cheney WA	Richard Orndorff
15C. Geology	Justin Luppens	Geotechnical Analysis of a Martian Soil Simulant JSC Mars-1	Richard Orndorff
16. Biology	Alex Breeden, Noah Adnet	Investigation of the Toxic Convergent Evolution Between Amphibians, Avians, Arthropods, and Reptiles in the Inland Northwest	Randall James (NCHS)
17. Biology	Nick Bryant, Kaylee Perich	Modified AFLP Analysis of 16s Bacterial Gut Consortia from <i>Bombus impatiens</i>	Randall James (NCHS)
18. Biology	Alex Choe, Trajan Gering, Megan Wood	Assessment of Metabolic Disorders in Columbia River Watershed White Sturgeon (<i>Acipenser transmontanus</i>)	Randall James (NCHS)
19. Biology	Abigail Colestock	Genetic Investigation into the Taxonomic Differentiation of the Sub-Genus Tuberous Lomatium	Randall James (NCHS)
20. Biology	Sierra Everman, Alli Gamble, Paige Barbeau	Assessment of Red Ban Trout (<i>Oncorhynchus mykiss gairdneri</i>) Predation by Small Mouth Bass (<i>Micropterus dolomieu</i>) in the Spokane River Watershed	Randall James (NCHS)
21. Biology	Glory Farrell	Identification of Novel Phenol Resistant Bacteria	Randall James (NCHS)
22. Biology	Hannah Gibson, Forrest Mousseau	Assessment of Genetic Diversity in Mitochondrial Proteins of <i>Canis lupus</i> (Grey Wolf)	Randall James (NCHS)
23. Biology	Alexandra Horn, Kaarina Miller	Analysis of Ancient <i>Bison bison</i> to Identify Founding Population's Frequency of Maladaptive Mitochondrial Mutations	Randall James (NCHS)
24. Biology	Alexander Kinnear, Taylor Huttyler	Maladaptive mtDNA Analysis of <i>Canis lupus</i>	Randall James (NCHS)
25. Biology	Rebecca Landron, Claire Ecklund, Kyra Fromm	Genetic Diversity and Durable Maladaptive Mitochondrial Mutation Analysis in Washington State Mule Deer (<i>Odocoileus hemionus</i>)	Randall James (NCHS)
26. Biology	Matthew Mickey, Sarah Lunnen, Gabrielle Clark	Analysis of <i>Pisaster ochraceus</i> for Maladaptive mtDNA Mutations and Links Between Sea Star Wasting Disease and Increased Ocean Temperatures	Randall James (NCHS)

Poster #	Presenter	Title	Mentor
Session 1 cont.			
27. Biology	Nadina Mrkaljevic, Zoe Zywiak	Assessment of Bottlenecked Montana Big Hole River Watershed Arctic Grayling (<i>Thymallus arcticus</i>) for Diversity and Potentially Increased Frequency of Metabolic Disorders	Randall James (NCHS)
28. Biology	Christina Negretti, Kristen Wanke, Taylor Charbonneau	The Optimization of Extracting Mitochondrial DNA from Dated Eastern Gray Whale (<i>Eschrichtius robustus</i>) Baleen and Bone Samples	Randall James (NCHS)
29. Biology	Jacob Powell	Analysis of Invasive <i>Pterois volitans</i> and <i>Pterois miles</i> Genetic Diversity	Randall James (NCHS)
30. Biology	John Shuster, Sean Flannery, Kendall Bart, Marie Chapmann	Analysis of Wheat Consuming Arthropods for a Novel Glutenase	Randall James (NCHS)
31. Biology	David Song, Oliver Miller, Christopher Golden	Analysis of Spokane River Watershed Soils for Metal Utilizing Chemoautotrophic Bacteria	Randall James (NCHS)
32. Biology	Jarret Walter, Spencer Niederstadt, Samuel Sjoberg	Identification and Analysis of the Heat-Regulating TRPV3 Gene in Mammoth	Randall James (NCHS)
33. Biology	Kristen Wanke, Taylor Charbonneau, Christina Negretti	Analysis of the Consumption of Endangered Salmonids by California and Stellar Sea Lions Using qPCR	Randall James (NCHS)

Poster #	Presenter	Title	Mentor
Afternoon 1:30-3:00			
1A. Biology	Will Mead, Megan Doherty, Timoteo Silvas, David Padgham	Comparative Analysis of <i>E.Coli</i> Abundance of the Murine Gut Microbiome Under Increased Dietary Cellulose	Javier Ochoa-Reparaz
1B. Biology	Trevor Kirby, Abby Keever	The Gut Microbiome Affects the Progression of Disease in a Murine Model of Secondary Progressive MS	Javier Ochoa-Reparaz
1C. Biology	Kseniya Maroz, Grace Kim, Manyee Chow, Angela Newman, Megan Hale	Mutagenesis of a Bordetella Virulence Protein	Susan Bassett (SCC)
2A. Biology	Tatiana Siegel	Sequencing Pieces of the Genomic DNA of <i>Pseudomonas fluorescens</i> L5.1-96	Ruth Kirkpatrick (SFCC)
2B. Biology	Robert Shadix	Ecology of Ticks and Tick-Borne Pathogens on the 30 Acre Trail at Turnbull National Wildlife Refuge (TNWR)	Krisztian Magori
2C. Biology	Bogdan Lisovenko	Using Morphological Traits to Distinguish Two Closely Related Local Tick Species	Krisztian Magori
3A. Biology	Na Matson	The Effects of Environmental Variables on Tick Numbers at Turnbull National Wildlife Refuge	Krisztian Magori
3B. Biology	Kyle Duckett, Justin Donahue	Heavy Metal Contaminants in River Water; Coeur d'Alene, Idaho	Carmen Nezat
3C. Biology	Wyatt Plastino	Comparative Examination of Lake Spokane Groundwater for Nutrient Discharge by Development Influence	Suzanne Schwab
4A. Biology	Sultan Areshi	A Comparison of Water Quality, Physical Habitat, and Biological Integrity of Two Streams Based on Macroinvertebrate Communities	Camille McNeely
4B. Biology	Chelsea Brown	Effects of Heavy Metal Exposure on Clam (<i>Musculium</i> spp.) Functional Traits	Joanna Joyner-Matos
4C. Biology	Shawna Warehime	The Effect of Two Anesthetics on Rainbow Trout (<i>Oncorhynchus mykiss</i>) Stress as Indicated by Water Cortisol Levels	Allan T. Sholz
5A. Biology	Aunalee Lindsey, Marissa Medina	Analysis of Soil Organic Carbon Content and Soil Respiration Rates from Wetlands in Eastern Washington	Justin Bastow
5B. Biology	Shelby Hunter, Jessica Colegrove, Katelynn Niehl, Leonard Simpson	Early Waterfowl Breeding Pair Survey of Wetlands on Turnbull National Refuge	Margaret O'Connell
5C. Biology	Anna Kravtsova	Flocking, Obstacles, and Agent Based Modeling	Krisztian Magori Frank Lynch
6A. Biology	Jolene Strand, Samuel Gunselman	Use of DNA Barcoding to Identify Fish Consumed by Lake Trout and Smallmouth Bass	Paul Spruell
6B. Biology	Jarrett Cellini	Climate Effects on the Relationship Between Invasive Annual Grasses and Biological Soil Crust in Eastern Washington	Rebecca Brown
6C. Biology	Hawa Abdi	The Effect of Different Antioxidant Solutions on <i>Brassica rapa</i>	Camille McNeely

Poster #	Presenter	Title	Mentor
Afternoon cont.			
7A. Psychology	Jena Goude	The Effects of Beliefs in God on Gratitude and Indebtedness	Philip Watkins
7B. Psychology	Adam Ross	Interactions Between Income and Gratitude	Philip Watkins
7C. Psychology	Kalvin Erbacher	Zombie and Disaster Preparedness	Theresa Martin
8A. Psychology	Ashley Jackson, Cierra Sande	Stress Levels and Animal Ownership	Theresa Martin
8B. Psychology	Alla Goleta, Elizabeth Dotson, Michelle Budiman, Yevgeniy Golubenko	Empathy of Pain in Family Members of Chronic Pain Sufferers	Jonathan Anderson
8C. Psychology	Ryan Willcockson, Leah Golian	Cell Phones: More Distracting Than a Pad of Paper	Jillene Seiver
9A. Psychology	Kelly Nichols, Nicholas Coker, Patrick Loyola	Study Habits and Test Anxiety: Their Role in GPA	Theresa Martin
9B. Psychology	Alla Goleta	Traumatic Brain Injury and Self-Awareness of Cognition	Jonathan Anderson
9C. Psychology	Lisa Chudoba	The Influence of Feedback on Metacognition	Danielle Sitzman
10A. Psychology	Mary-Jo Waterbury	The Use of HRT and Mild-Aversion Therapy to Treat Habitual Behaviors	Charalambos Cleanthous
10B. Psychology	Tabitha Black, Mary-Jo Waterbury	USA Female and Male Commercial Pilots' Views of CRM (Crew Resource Management), Social Desirability, and Safety Locus of Control	Charalambos Cleanthous
10C. Psychology	Tabitha Black, Mary-Jo Waterbury	Presentation of Desirable Responding in Commercial Pilots: Profile View and CRM (Crew Resource Management)	Charalambos Cleanthous
11A. Psychology	Ashley Jackson, Hena Amin, Rayanna Tensley	Long Term Parent-Child Relationship Disruption in Post-Divorce Conflict	Theresa Martin
11B. Psychology	Raquel Ramos	Long-Term Effects of Childhood Trauma on Shopping Behavior	Deanna Trella
12A. Psychology	Michelle Budiman, Rachel Overland, Alla Goleta, Gabrielle Lucente, Aubrey Weekes	Depression, Aggression, and Child Abuse	William Williams
12B. Psychology	Amanda Taylor, Marie Gray, Michaela Barrett, Sarah Wallis, Jordan Liebrecht	Three Measures of Aggression Compared	William Williams
12C. Psychology	Kandise Holcomb, Caitlin April	Reactive and Proactive Aggression in Maltreated Children and the Role of the MAOA Gene	William Williams
13A. Economics	Owen Anderson	The Effects of Historical Institutions on Economic Growth	Nicholas Larson
13B. Economics	Kyle Damon	Reexamining Economic Theory Utilizing an Open Pit Market Experiment	Mark Holmgren
13C. Economics	Hope Morrow	The Impact of Women's Labor Force Participation, Education, Income, and Race on Family Planning	Kelley Cullen

Poster #	Presenter	Title	Mentor
Afternoon cont.			
14A. Economics	Coral Wonderly	Is It Worth It? The Impact of Football Facilities Spending on FBS Team Ranking	Nathan Skuza
14B. Computer Science	Aryk Anderson, Shane Olson, Tanner Cook, Audrey Henry	An Investigation into the Political Landscape of Hillary Clinton Using Cluster Analysis	Dan Li
14C. Computer Science	Ryan Babcock	Live Video Streaming Using Raspberry Pi and Amazon S3	Yun Tian Carol Taylor
15A. Social Work	Kimberly Le	Older Adult Sexuality in Skilled Nursing Facilities	Sharon Bowland
15B Economics	Kyle Damon	Reexamining Economic Theory Utilizing an Open Pit Market Experiment	Mark Holmgren
15C Economics	Hope Morrow	The Impact of Women's Labor Force Participation, Education, Income, and Race on Family Planning	Kelley Cullen
16. Chemistry & Biochemistry	Matthew Doherty	The Effect of Student-Made Puzzles as a Study Tool on Student Grades	Ashley Lamm
17. Public Health	Ghazal Meratnia, Lauren Luther, Kurtis Godfrey	Spokane Retail Survey	Frank Houghton Olugbemiga Ekundayo
18 Public Health	Hayley Hodgins	Integrating Health Departments Through Workforce Development	Frank Houghton
19. International Affairs	Audel Rosas	OPEC vs Non-OPEC: The Current Estate of the Oil Market	Vandana Asthana
20. Mathematics	Christopher O'Connell	Neural Field Models—A Study of Learning and Memory	Andrew Oster
21. Mathematics	Amanda Grogan	Affecting Tutoring Practices to Improve Student Learning	Jackie Coomes
22. Chemistry and Biochemistry	Kyle Elsasser	Length Determination Using Interferometry	Tony Masiello
23. Biology	Leonard Simpson	Carbon Sequestration with Biochar; A Possible Short-Term Mitigation to Climate Change and a Relevant Biomass Enhancer	Justin Bastow
24. Chicano Education	Aaron Ross	Latino/a Activism	Martin Meraz Garcia
25. Chicano Education	Dulce Gutierrez Vasquez & Amanda Marie Mell	Rewriting the Narrative: The Rise And Effects of Marginalized Communities In Traditionally White Roles	Norma Cardenas
26. Geography	Julia Furlong, Jeffrey Cortlund Johnson, Michael Snyder	Bridging the Gap between Universities and Nonprofit Organizations through Collaborative GIS: A Case Study with Eastern Washington University (EWU) and the Spokane Edible Tree Project (SETP)	Stacy Warren
27. Economics	Donya Quarnstrom	Is the Wage Difference Between Spokane County and King County Offset by Cost-of-Living Differences	Kelley Cullen

Creative Works Project Descriptions

Every Day Things

Jennifer Acevedo

Jenny Hyde, Art

This is an interactive website that was made to describe events in life. These events are all things that can happen in everyday life. They are also instances where the expectations I was raised to believe in may have been broken and opened my eyes to what is possible.

Nature and Process

Rebecca Adams

Jenny Hyde, Art

In this body of work my investigations include the exploration of relationships, patterns in chaos, humor in the absurd, the human impact on the natural world and vice versa, and personal experiences. The subtle contradictions found in modern life have always interested me. The surprising similarities between naturally occurring things and human invention inspire me to create a world infusing the two. Utilizing tiny details, hidden imagery and meaning I enjoy intertwining the precious with devastation. As functional objects formed by human hands are reminiscent of a flower's natural shape and beauty, what speaks to me is the ability to make connections within these things as an expression of my amusement, fascination, deep regard, utter frustration and sometimes disgust as a pure expression of creativity and problem solving in pursuit of making sense of existence with visual representation. I use variety of mediums used by mixing, blending, and layering as much as I do with imagery and meaning while hinting at nostalgia.

Untitled

Abdulaziz Alabdulkareem

Greg duMonthier, Art

40 figures standing on 2 inch plexiglass above a wooden structure.

Creative Writing Master's Thesis Selection

Madeline Allen

Rachel Toor, Creative Writing

I plan to read an excerpt from my Master's thesis, which is a collection of personal essays. In my writing, I like to explore topics such as family relationships, music, modern dating, and body image. My work has been influenced by writers such as Joan Didion, Nora Ephron, and Ann Patchett.

Stage Painting – Landscape

Hannah Bancroft

Shana Joslyn, Theatre

Highlighting one of the most beautiful (and often overlooked) branches of technical theatre, this project brings to life the artistry of scene painting. It combines a myriad of techniques, including wet-blends, sponging, brickwork, and foliage patterns. In the work, a night sky with the silhouette of a tree upon on grassy hill is revealed through a break in a red-brick wall. The powerful contrast of color and value, as well as the scale of the piece, reflect the characteristics of theatre scene art. Best observed from twenty feet, this work embodies artistic beauty and form that is prevalent in theatrical arts – an interpretation of the world that is bolder and larger than life.

Scenic Painting

Kyle Beckwith

Shana Joslyn, Theatre

The first painting is my foliage project. The goal was to use the techniques taught in class to create some form of plant life. Mine is a picture of a tree in a large field of grass during sunrise. The second is my final project. We were required to put foliage, brick, use a scumble technique, and a wet blend technique, an amalgamation of the various techniques learned throughout the quarter. Mine is of Batman crouched on a brick building next to a gargoyle, with the dark city as a backdrop.

Floral Branding Project

Kimberly Betzina

Travis Masingale, Visual Communication Design

This series features three hand-illustrated posters that represent the branding and advertising for a florist in Spokane. Each poster showcases it's own unique floral illustrations and color scheme, and the hand-lettered logo that was also created for the business. Accompanying the posters is a full brand identity sheet that includes color pallets, typeface and logo variations. To complete the branding are three business card variations, each one designed to match it's corresponding floral poster.

Ode to a Montana River

Montgomery Boldt

Jonathan Middleton, Music

This composition for solo Marimba was written to capture the unparalleled beauty and dangerous unpredictability of a river, specifically the Kootenai River in Montana. It is built on several recurring themes, and variations on those themes. Given the multiple octaves of the instrument, this composition portrays the diverse characteristics and surprising twists and turns of the Kootenai River.

Waves

Jessica Brooks

Chris Tyllia, Art

This work was constructed as a 3D object and then altered with a variety of digital techniques. There was an intended exploration of light and shadow, as well as giving the impression of landscape both with oceanic fluidity and mountainous stability.

Guitar Ensemble – Aspiration

Jake Cunningham, Douglas Gade, William Boule, Jacob Johnson, Aaron McCullough, Tim Gales, & Tim Zilar

Jonathan Middleton, Music

Aspiration was composed summer of 2014, as my second piece for Guitar Ensemble. It was composed very slowly over a few months, which could explain the varying compositional styles in the piece. My electric guitar and rock 'n roll backgrounds shine through in the writing, or so I've been told. This piece is a reflection of the drive humans can muster to achieve their dreams, regardless of the obstacles in the way.

Foliage

Leah Dach

Shana Joslyn, Theatre

For Tech 2 (theatre), we were given 4'X8' flat to paint on. The task was "foliage" and we had to paint what we saw - in other words, we had to paint as close to the picture as we could possible get. I chose a picture that was taken from the perspective of inside a cave looking out because I thought it had a challenging aspect and I'd have to use many different techniques to get the picture across. A few techniques I used was a scumble (blending two colors together), wet blends, stippling, and rag rolling to name a few. This project took about 5 days, with maybe 15 hours within those days.

Why Do We Have to Die?

Matthew Darjany

Rachel Toor, Creative Writing

In this personal essay I draw on my experience in the military to show how people who conform thrive in a military environment, and people who do not conform are often marked as an outsider, or an "other." I have written this essay after the style of Michael Lewis' sentence structure in his book titled Moneyball. This essay is dedicated to Justin Miksch.

Agony

Ashleigh Davidson

Jenny Hyde, Art

With my work I am trying to show case the strong emotion of life. I want my work to serve as a snapshot of those passing moments in our lives. In my paintings I explore what it feels like to lose a loved one in a tragic way, what happens when unlikely friendships occur, the life defining moments of myself and others, and what it feels like to be loved. The topics that I chose to portray in my work should be universally understood because my work is ubiquitously human, even if the work is extremely personal.

10 Minute Autodramas

Madeline Dodge

Sara Goff, Theatre

10 Minute Autodrama. Self written and performed for a class final. Story of important moments in life and the lessons learned. As well as looking forward to the future.

The Agony of Mercy

Jordan Estrellado

Rachel Toor, Creative Writing

I wrote this poem after being taken apart for poetic diction in a workshop. It's about the euthanization of the family dog; though what truly happens is a coming-of-age tale. The father cannot bear the weight of the responsibility to command mercy, so the proverbial torch and burden is passed on to the speaker. My influences for line breaks and pacing come from the dog attack in Gail Caldwell's book "*Let's Take the Long Way Home.*" My influence for the overall subject is Rachel Toor, because she promotes that the best writing of any subject is found where you don't want to look."

Happy Ending

Ariane Flos

Rachel Toor, Creative Writing

This personal essay will be about a young woman and her father as she explores the world of dating. Also, there will be a look at how unintentional actions can change the simplest things and lead people towards paths they never thought they would go. I was influenced by my own relationship with my father and the expectations of today's society for young women and dating.

Rescindment

Margaret Francik

Jonathan Middleton, Music

"Rescindment," is an art song for piano and soprano voice that uses poetry also written by composer Margaret Francik. One meaning of the word "rescindment," is to do away with something by formal action. The text for this piece takes inspiration from this definition, describing through words of labor and trespass the burdens of the speaker and the battle that ensues as she begins to lay them aside. Musically, voice and piano acknowledge this struggle through pounding, relentless textures in the piano and great leaps of agility and range in the soprano's part. The lyrical middle section reflects the calm, resilient inner world of the speaker, before returning with even greater dissonance and chaos to the outward battle. With ever increasing fervor from the soprano's line, the piece culminates with her raucous victory.

Weaving Together Revealed

Julie Francois

Tom Askman, Art

I will have 3-4 drawings of approximately 5 ft x 5 ft, drawn on heavy stock paper, using oil pastel and charcoal. that are woven together. Building on the idea of the heart of the connection between two subjects or two subjects together experiencing a connection. In these mediums I discovered varying types of relationships between people, I believe I can see at that very moment where the connection of the condition and subject is revealed to me.

Plane and Simple

Douglas Gade

Jonathan Middleton, Music

"Plane and simple" is a musical work that was the result of study in modes of limited transposition. Made famous by French composer Olivier Messiaen, modes of limited transposition is a pitch set that can only be transposed on the 12 pitches of the Western system a limited number of times. With my set of pitches I decided to apply the jazz technique of planing chords, but only within my pitch set; planing is the act of moving a chord shape from one root to the next without concern of key. I then took it a step deeper by applying an algorithmic approach to my planeing; that is I took the original chords and planed them either up or down in accordance to the number next in my pitch set. The result is rendered in numerous passages in Plane and Simple, though I didn't limit myself to planeing through the entire piece, I relied on the concept to give me a great launching point.

Aura

Kennan Gary

Jenny Hyde, Art

This project focuses on manipulating light and experimenting with color. In a sense this project is the visualization of sound. The projectors will be displaying 2 different animations that I've created. The light from the projectors will be reflected off of a mirrored surface causing a whole room to be filled with segments of light. Thus creating an aura in the room.

Turtle Shell Mountain

Benjamin Gaynor

Rachel Toor, Creative Writing

This personal essay is the newest addition to a collection of non-fiction essays that I've been working on for the past year. The essay reflects on the death of a young girl who was hit and killed by a truck that illegally passed a stopped school bus, and how that incident led me to question my faith. Ultimately, the piece aims to explore the idea of whether or not I am being held back in my own personal growth by holding on to the principles of a faith I do not believe, or whether Christianity can still prove a beneficial tool that enriches my life.

The Way She Went - A Prose Poem

Tori Harned

Rachel Toor, Creative Writing

I will be reading a prose poem about the relationship between a boy and a girl as it falls apart. The idea came from the story of my friend's past relationship with a pathological liar. I was heavily inspired by the poetry of Carolyn Forché, who coined the term "poetry of witness," and the song "I Knew You Were Trouble" by Taylor Swift.

The Direction of Shitty Poetry

Paige Harvey

Rachel Toor, Creative Writing

This short personal essay is about how writing has become a tool that allowed me to cope with the death of my dad. It incorporates poems I wrote during the worst of this experience in their ragged flawed versions to show the progression of grief and hopefully the progression of my own skill as writer. It contrasts both unedited poetry and contemplative nonfiction to explain how some of the worst things I have written have been the most helpful.

Sgraffito Explorations

Michael Haynes

Lisa Nappa, Art

Traditional wheel-thrown ceramic vessels with sgraffito line-work. These pieces are exploring the techniques to apply sgraffito and use different layering methods to achieve pattern, visual texture, and interesting marks.

Feminism Is...

Fira Hedlund

Mimi Marinucci, Women's & Gender Studies

A slam poem examining the feminism of the presenter, why the presenter uses that specific term, and jhur/their understanding of what 'feminism' means.

A Winter Day at Geiger

Rosalie Huff-Waters

Rachel Toor, Creative Writing

This essay tells of a young woman pardoned by President Clinton when he left office. Her story explores how arbitrary enforcement of drug laws and draconian minimum sentencing laws combined to unnecessarily destroy lives, sometimes innocent lives. Recent events have brought the issue of federal mandatory minimum sentencing to the forefront, as well as the changing landscape of the so-called "War on Drugs." This story gives a human perspective to these issues.

Poems on War and Terror

Kristine Iredale

Anthony Flinn, English

The poems I have written are based on my experiences as a female soldier who deployed to Iraq. It delves into the insights of how frail human life is, being a woman in an all-male environment, the consequences of war, and power relationships.

Iro-go

Joe Kallman

Greg DuMonthier, Art

Acrylic on Canvas painting created as part of a current body of work exploring color and the pictorial nature of Eastern languages and calligraphy. The figure is included or subtracted to further explore the relationship of how people interpret line and color into visual and written language. It also offers a dialogue and opportunity for interpretation by individuals on how both communication and miscommunication can occur within common forms of visual and written forms and the human need to seek meaning where meaning may be implied but does not actually exist.

Disorient

Gerrod Kroll

Jonathan Middleton, Music

This musical work represents the effects of disorientation on the adventurer (at least my imaginings of such events) such as incurred when scaling a mountain or other landmark of considerable elevation. I have attempted to create an auditory picture of the journey; including the ascent of the mountain, reaching the summit, experiencing a surreal and/or disorienting moment (such as can be experienced during a panic attack), and the eventual recovery and returning to one's senses.

Southwest Wild Cock Season - Prose Poem

Timothy Lacey

Rachel Toor, Creative Writing

This prose poem addresses societal expectations of today's youth and as well as labels which have been placed on gender roles. The idea came to me after reading Russell Edson's "The Tunnel: Selected Poems," wherein I strive to mimic his peculiarity while striking the reader with imagery. Influences for the piece derive from Kurt Vonnegut's Tralfamadorians who opened my eyes when identifying "no fewer than seven sexes on Earth," and Luther Burbank's "The Training of the Human Plant."

Exploring Memory in Creative Nonfiction

Lisa Laughlin

Rachel Toor, Creative Writing

My creative work consists of writing creative nonfiction essays. I am most interested in structure; I typically write in the segmented essay form, and like to experiment with the short form or flash essay. Topics I especially like to explore are family mythology, storytelling, the relationship between people and place, and memory. I find that these topics typically blend together. The piece I will present is a personal essay that begins to question the importance of absolute truth when it comes to crafting personal mythology. This is a segmented essay that emphasizes the effect of strategic white space, or the pause in section breaks that allow an idea to linger and sink in before moving to the next segment. It is a piece that is meant to show "brainwork" on the page as it explores not only the fallibility of memory, but also what we do when we receive new information that demands a "rewrite" of our personal narrative. Have you ever had someone tell you something you didn't want to know?

Wisteria Final Project

Elizabeth Lewis

Shana Joslyn, Theatre

For this project, the objective was to demonstrate at least 6 different painting techniques, while incorporating elements of both brick and foliage. The painting is meant to be seen from 20 feet away, from the audience to the stage. This piece includes textures such as stippling, sponging, stamping, wet and dry color blends, and masking. Some colors were blended directly onto the sponge, creating a gradient on the leaves. The bricks were created by using a dry scumble to blend different shades of grey for the mortar, then using tape to mask out bricks, and finally, a scumble of reds and yellows for the colors of the bricks.

Impressionist Photography

Talmud Lisa

Ira Gardner, Digital Media Production, Spokane Falls Community College

This body of work is inspired by research into impressionist and abstract expressionist painting. The work is designed to explore the range of creative options that can be used to express emotions through the medium of photography.

Ceramic Vessels

Jeremy Lenhartzen

Lissa Nappa, Art

Ceramic vessels featuring Byzantine style figure drawings.

The Art of Failure

Marjorie Loosmore

Rachel Toor, Creative Writing

"Why are we uncomfortable with silence? In my personal essay ""The Art of Failure"" I will be focusing on the struggle as a comedic improviser to be comfortable with silence on stage. How silence is the greatest enemy to any performer on stage and how actors protect themselves from their fear of failure."

At Home...

Lauren McKinley, Honors Scholar

Jonathan Middleton, Music

At Home... is a composition written in a contemporary jazz style, and includes many improvisatory elements while maintaining a loose form. The title of the piece is inspired by an individual finding their home, the place where they belong. That definition of 'place' in this context could represent a variety of meanings; not just one's location, but rather their career, religion, and personal philosophy

Film Noir and Contemporary Photography

Havalah Moran, Diane Pippin, Denessa Hoskins, Amanda Harper, Kiefer Brown

Ira Gardner, Digital Media Production, Spokane Falls Community College

We are presenting a composite image that is based upon a film noir style and the Edward Hopper painting Nighthawks. The work was produced as a team during a recent class competition titled “Top Shots”. The project demonstrates the relationship of art history to contemporary digital photography.

Experimental Videoing (untitled)

Josias Navarro

Eric Galey, Design

An experimental video/film. An exploration of video production using skills, tools, and remixing assignments from DESN 375: Digital Video. Explored concepts include: “farrago” video editing, the use of B-roll, an integration of varying degrees of video and audio quality and how these can be presented together. Farrago videos are a mish mash of different clips that harmonize into one congruous video with the aid of audio. B-roll clips are video that is played over of A-roll video; B-roll audio is usually lowered or removed. This creative work is an experimentation with the editing and production process of making film/video, but not in script, narrative, or character development from a film education context.

The Death of the Goblin King

Donna Parks

Rachel Toor, Creative Writing

This personal essay recalls my experience at Spokane’s first PAC-Con. Gene Roddenberry’s vision of a future in which many of humanity’s problems are significantly improved has always been inspiring to me. The essay includes the first time I saw Star Trek and my Dad’s opinion of that and the surprising echo of that opinion from William Shatner. I touch on contemporary society and writing about an optimistic future in this work. “The Ethics of Star Trek” by Judith A. Barad inspired me to go to the PAC-con and to write this essay.

Childhood in a Semi-Secluded Society

Atanas Petrov

Paul Lindholdt, English

In this essay overlain by Sherman Alexie’s book *The Lone Ranger and Tonto Fistfight in Heaven*, I reflect upon my childhood in a rural village in post-socialist Bulgaria emphasizing poverty, alcoholism, and religion.

Theater Works

Joseph Phipps

Sara Goff, Theatre & Shana Joslyn, Theatre

I'd like to present work from two of my courses this year. The first called an Autodrama, which is a devised exercise in theatrical direction which uses metaphor and dramatic arts to incorporate important events from the student's life into a 10 minute play. The second is a painting from a technical theater class which utilized fundamental scene painting techniques.

Trees and Textures: Scenic Painting Techniques

Mica Pointer, Honors Scholar

Shana Joslyn, Theatre

One of the challenges of theatre is creating the illusion of reality, and one area in which this is especially apparent is in scenic design. In this presentation, the scenic design of a Japanese maple tree will provide a case study to explore a variety of texturing techniques which may be used to give an extra dimension of realism to any painting or design project.

Her Last Day

LaChell Randolph

Rachel Toor, Creative Writing

This poem was influenced by "A Story in an Hour" where Kate Chopin writes a page and half of someone's last hour of life and Erza Pound's idea that every image should have a purpose that moves the poem. This poem is about my great grandma's last few hours of life. She had lived a full ninety-six years. I wrote this poem to imitate telling someone's story in a short amount of time and to leave myself with a lasting memory that is beautiful and peaceful instead of tragic.

Pretty Little Drawings

Shelby Rankin

Jenny Hyde, Art

A series of small drawings that are inspired from various sources of pop culture. Also another piece that deals with reinventing the way we view women via pin ups.

Love

Dixie Sampson

Sara Goff, Theatre

"Love" is an abstract autodrama that utilizes the metaphor of balloons to describe the ins and outs of love within the main character's life. It is a one-person piece with some audience participation involved. Popping balloons signify the death of people and relationships, blowing up balloons indicates the forming of new relationships, and the piece ultimately climaxes when the main character shares their love - and their balloons - with those around them.

Cherry Blossom Scenery Piece

John Siebel

Shana Joslyn, Theatre

This is a 4x8 flat of scenery featuring a view of cherry blossom trees. The piece was created for the theater technology 2 class. It uses multiple scene painting styles and a painting focus on the idea that the closest the audience will be to the work is 20 feet.

My Dad the Samurai

Victoria Smartt

Rachel Toor, Creative Writing

I plan to read a free verse poem written after the death of my stepdad. He was an artist of all trades, a veteran, and a large influence in my life. This poem serves as a reminder that those we love live on through their own art and the art inspired by them. The poets whose work has influenced me are Laura Read, Dorianne Laux, and Benjamin Alire Saenz.

Carly- KCACTF Package

Carly Stewart & Jack Siebel

Sara Goff, Theatre

This package was presented at the Kennedy Center American College Theatre Festival- Region 7 in February of this year after Carly was nominated for an Irene Ryan Acting Scholarship for her performance in EWU's fall production of "Pocatello".

Libra

Anthony Stillinger

Rachel Toor, Creative Writing

This short story traces the arc of a relationship over the course of a single interaction. Influenced by the dream-like stories of Neil Gaiman, Haruki Murakami, and Joy Williams, the piece uses the bizarre and unsettling logic of dreams to explore how a shifting and reversal of interest in a relationship occurs over a single conversation.

Fractured

Kacy Tellessen

Rachel Toor, Creative Writing

This short piece of fiction was composed in conjunction with a form and theory class on fiction. The writing prompt was to craft a piece of fiction that told a story from multiple points in time, with an emphasis on transitioning from the past and present. The story follows a war veteran who is trying to stop his past life from destroying his current life.

Paint Isnt Forevr

Ashley Tooke-Robinson

Ginelle Hustrulid, Visual Communication & Design

When one hears the word “graffiti” the first thing they usually think of is gang markings or vandalism, but that’s not what it is as a whole. Graffiti is an ephemeral form of art that is to be done in a public setting for all to see and experience. For this photo-based project I wanted to show people that there is more to graffiti than what they think. Going into Spokane everyday for 2 weeks I photographed every piece of graffiti I could on streets and trains passing through. I organized and divided these photographs into the different styles: wheat-paste, character, tags, and so on. I designed 40 postcards with these graffiti images, gave each of them either a geo-tag or freight number to be located by, as well as a corresponding term on the back of the card. Because of the ephemeral nature of graffiti, the image you see on the card may not be the same image you find when you go to the location. This new piece can now be re-documented in its new form, and posted to the instagram account @paintisntforevr, forever allowing the evolution of graffiti to be experienced.

The Radium Girls

Ashley Tooke-Robinson

Ginelle Hustrulid, Visual Communication & Design

This poster project visually tells the historical story of the Radium Girls. The Radium Girls were factory workers for the US Radium Corporation during WWI. Their job was to paint watch dials with Radium so that they would glow and were told that the Radium paint was perfectly safe and to "lip lick" the brushes. Within a few years, many of the workers began to develop growths, glowing skin, rotting jaws, or worse. They would go to doctors for help but would be told they have syphilis, in order to protect the US Radium Corporation. One of the women Grace Fryer decided to sue the company gathering other women to help. They became known as the Radium Girls and eventually won but were all dead within 5 years of winning the case. This is how we got our current worker safety rights. These two-color silkscreen posters show the simple image of WWI style propaganda in normal daylight, but under UV light or in the dark, reveal the reality of what becoming a Radium Girl looked like; with the skeleton of the women being shown and the message “Radium, it’s perfectly safe” suddenly appearing.

Identity Struggle Autodrama

Warite Uke

Sara Goff, Theatre

This is a ten minute solo theatrical performance.

To be a Viscera Technician

Charles Vaught Jr.

Polly Buckingham, Creative Writing

As a writer, I have been influenced by my numerous travels, the people I meet, and the adventures I get into. These are the subjects that both fascinate me and inspire me to put pen to paper. My intent with my writing is to shed light onto the overlooked aspects of the world we live in. I write stories that deal with reality, as I know it. I write about wildland firefighters, fishermen, and nomadic travelers. Every story I write I pull from my own experiences. Today I will be reading a chapter from my unpublished memoir, “a story of a young man’s journey of self-discovery” set against the backdrop of the Alaskan fishing industry. This chapter describes my first shift as a viscera technician onboard the Northern Jaeger.

Hypochondria Must Be Hereditary

Karla Wahl

Rachel Toor, Creative Writing

What, precisely, is the true definition of Hypochondria? Are the symptoms really just in my mind? For almost two decades I’ve endured the reality of living with “invisible illnesses” and mistrust in my doctor-patient relationships. Now I’m watching my sister suffer through the same fate: being labeled a hypochondriac.

Stripped

Laree Weaver

Jenny Hyde, Art & Yaro Neils, Art

This work traces energetic inner processes through the use of recording movement and stripping away details to the binary qualities of darkness and light. Revealed within this territory are the personalized means for exploration, remembrance, coalescence and transformation.

Painting

Reece Webb

Tom Askman, Art

This painting is made with oil paints on canvas. I wanted to deal with light and create a dramatic scene.

Downtown Ages

Charles Werneth & Kry Brown

Ira Gardner, Digital Media Production, Spokane Falls Community College

This work is a multimedia slideshow based upon an integrated assignment with a poetry class. The purpose of the project was to explore how words and images can create a sense of place within the Spokane community.

Oral Abstracts

The Effect of Different Antioxidant Solutions on Brassica rapa

Hawa Abdi

Camille McNeely, Biology

The advanced technology and methods of soil fertilization used to increase crop production is currently in use in most countries; however, these advantages are at times inaccessible to the poor farmers and families in poverty. Previous studies have shown that soils with higher antioxidant capability had increased enzymatic activity and soil respiration. We hypothesized if antioxidants have a positive effect on organic matter in the soil, there may also be a positive effect on plant growth. We took 20 of the Wisconsin Fastplant and randomly split them into 4 treatments and 1 control group. Each group had 4 plants for replication. The first treatment was with cranberry juice, the second treatment was PH (rice vinegar), the third treatment was with green tea, and the fourth treatment was vitamin C solution. We gathered the mean of the mass and growth height of each treatment group using the tukey test. Data suggests when plants that already produce antioxidants for plant growth promotion and free radical inhibition with antioxidants, there is a significant difference in the plant height.

Three Dimensional Modeling of Paleochannels of the West Plains

Drew Adams

Chad Pritchard, Geology

Paleochannel systems filled with coarse sediment are not easily seen at the surface, however, they have become an integral part of storm water disposal and groundwater hydrology of the West Plains, in eastern Washington. Further identification and delineation of paleochannels in the West Plains area of Spokane County is important as the communities continue to expand and develop. Using existing well data and the ESRI programs ArcMap and ArcScene the paleochannels were modeled to estimate the volume of the paleochannels as well as to analyze three dimensional models. The infilled sediments were deposited by glacial outburst floods from Glacial Lake Missoula. Interchange between basaltic aquifers and the paleochannels is assessed and plays a fundamental role for residential, commercial, and academic purposes in the West Plains, Spokane County, Washington.

Campus Accessibility Application

Drew Adams, Michael Snyder, Ben Johnson

Stacy Warren, Geography

Since the passage of the Americans with Disabilities Act of 1990 (ADA) postsecondary education institutions have taken steps to make education accessible to all students. This has included making physical changes to campuses to make all university classes, functions, and events accessible to all students. Finding information about accessible buildings, paths, and parking in an efficient and timely manner, however, has been a challenge for students, staff, and visitors alike. This presentation is an on-going project at Eastern Washington University to make a publically available web application that provides an annotated campus map detailing accessibility, and calculates routing information for anyone who needs accessible routes of travel once they reach campus. The app will determine walking, wheelchair, and driving routes

between specified locations at the user's request, as well as find the nearest handicapped accessible entries and bathrooms, areas of rescue, braille signage, gender neutral bathrooms, and handicapped parking spaces.

The Father and the Orphan in Islam: An Auto-ethnographic Study

Braik Aldoshan

LaVona Reeves, English

In Islam, it is believed that fathers play a major role in the development and education of children--as do mothers. The Prophet Mohammed lost his parents when he was young, and because he was an orphan, he believed that anyone caring for an orphan would hold a special place in the hereafter. The Holy Prophet said: "The best thing a father provide to his child is good manners and ethical training." Often when children in the Kingdom of Saudi Arabia lose the father, as the author did, there is a stigma attached to the boy with no father, and a tremendous hardship is placed on the family. In his case, the author had to step up and become the "man" of the house at a tender age, helping his mother to raise many siblings and going to work at an early age. The author, as a child, had many disadvantages because his mother could not go to school to meet his teachers because women cannot enter public spaces without an adult male family member. He analyzes his own life and "liminal" passages--the thresholds to literacy and academic success while raising six children of his own.

Effects of Technology Usage on Child English Language Learners

Hamza Aljunaidalsayed

Tracey McHenry, English

English Language Learners (ELL) is an educational priority in the United States as the country has become part of the global community because of technology and the interconnectedness of our cultures. English has become the dominant language around the world; the years 1998-99 to 2008-09 saw an increase of 51% in the population in the pre-k-12 enrollment around the United States and technology has proven to be one of the best tools for ELLs and biliteracy. The use of technologies will not only allow learners to quickly master new language skills through exposure to a variety of new technologies, but also, the excitement that comes with these new medium can motivate learners for an extended period of time. This study is intended to evaluate the most effective methods and technological platforms that best promote that goal; after analyzing more than 125 responses to this study's survey, from parents about their children's technology usage, it is clear that the students mostly use smartphones and laptop computers to access their homework and studies.

"Rhetorical Attunement" and Translingual Moves: An Auto-ethnography

Muhammad Alkhidhr

LaVona Reeves, English

“Rhetorical attunement” is felt when “multilingual writers [are] encouraged to compose from the full expanse of their languages and literacies” which are not “static” because “writers call on or create literate resources in the process of making do, asserting themselves, or communicating on the fly in specific rhetorical situations... creating and adapting language reveal the 'rhetoricity' of writing across languages” (Leonard, 2014, p. 228). Often, multilingual writers do not view translingual moves as opportunities to merge identities and adopt a new repertoire they acquired when becoming bilingual or multilingual. Rather, it is common for bicultural/bilingual individuals to feel that one culture or language is dominant, and that language dominance is unavoidable. The author, however, through daily writing in English class at EWU, felt that English had become his language of choice and that English is his anchor for academic writing and thinking. The research method is auto-ethnography in which the author engages in self-translation common in literacy narratives (Soliday).

Repatriating Stolen Antiques: Should Looted Antiques Be Returned to Their Country of Origin?

Heidi Allred

Barbara Miller, Art

Looting of countries has been an ongoing threat. For those countries the loss of artefacts pertaining to their cultural heritage has been devastating. Many have ended up on the Black Market, in museums, or being used to finance terror. The UNESCO Conference of 1970 saw new laws were put into place to conserve cultural heritage and prosecute those who deal with antiques illegally. Some countries and religious groups are asking for their looted items back. Should they be repatriated back their country of origin or remain under the stewardship of their adopted country.

Bilingualism and the Preservation of Heritage Language (HL) in Children of ELL Parents

Omnia Aloffii

Tracey McHenry, English

Children of immigrant parents often believe that English is the main language they need to speak and when both parents speak a different language than the dominant one of the community, typically the child speaks both the dominant language of the new country and the parents' language. Those children often believe that their native or heritage language is less important than English, but studies have found that those new English language learners should be helped to believe that their native and new language are equally important. Additionally, this study's 120 plus respondents wanted their children to remember their HL and be proficient in English as well. Thus, early childhood educators dealing with students who speak English as a new language should learn the pragmatics and semantics of the home language of the student and his or her parents in order to fully develop a more meaningful relationship because that makes the second language learning more successful.

Source Separation from a Polyphonic Audio File by Using the EEMD-ICA Method

Jose Anders

Min-Sung Koh, Engineering

Audio files recorded from either a band or an orchestra have several musical instruments playing simultaneously. Although lots of research have been done to separate the audio of individual instruments, it is a still challenging problem. Musical instruments tend to occupy frequency ranges significantly less predictable than the human voice. This variability and inconsistency makes the design of a specialized algorithm very complicated [1]. Several solutions to this problem have been proposed using methods such as source-filter model and an augmented non-negative matrix factorization algorithm, but to the author's knowledge none have been completely successful to date. This paper demonstrates a different approach to solve the problem of separating the audio created by the individual musical instruments in a band or orchestra. The approach is accomplished using a combination of both Ensemble Empirical Mode Decomposition (EEMD) and Independent Component Analysis (ICA), which has proven to outshine signal decomposition methods like Wavelets ICA and Single Channel ICA

Reflections on a "Battler" Aussie Mother's Love: A Lesson in Resilience

Carol Anderson

LaVona Reeves, English

Foremost was the “battler” spirit I learned from my mother, an Aussie. A “battler” in Australian Language and Culture is someone who survives even the greatest of adversities (Blake, 2007). She never gives up, no matter how hopeless things seem. My mother had seen tremendous adversity, from her hard life growing up in poverty, to being widowed at 18, to being abandoned in a foreign land with four small children, to marrying an abusive drunk. She never complained. She just kept moving on and surviving in the midst of it all. Her humor, albeit sarcastic, kept us all going. Hunt (2013), in *Girt: The Unauthorized History of Australia*, frames this critical ethnographic single case study and makes it accessible to all of us born long after WWII.

Relaxed Mental State Detection Using the Emotiv Epoc and Adaptive Threshold Algorithms

Olin Anderson

Paul Schimpf, Computer Science

The electroencephalogram (EEG) has proven to be useful in a wide variety of applications, including: diagnosis of mental disorders, psychological research, neurofeedback, and brain computer interfacing. Most such applications of the EEG benefit from an ability to automatically detect when the subject is in a relaxed state. Recently, inexpensive and relatively easy to use EEG systems, with multiple electrodes, have become available at prices comparable to cellular phones, or game machines. The purpose of this project is to investigate the feasibility of real-time classification of a subject's relaxation state using one such consumer-grade EEG system, the Emotiv Epoc. The subject's state is classified as relaxed or not relaxed by monitoring the EEG signals over his or her occipital brain region and monitoring alpha wave activity. Said activity is characterized using an adaptive subject-specific threshold algorithm. Different variations of the threshold algorithm were investigated and their performance was compared using receiver operating characteristics graphs.

Actions Speak Louder than Words: The capitulations of Charlotte Brontë's Jane Eyre, and how Anne Brontë used satire to craft a superior feminist hero

Jaclyn Archer

Beth Torgerson, English

Charlotte Brontë's direct challenge of Victorian patriarchy in *Jane Eyre* is ultimately less radical than Anne Brontë's indirect challenge in *The Tenant of Wildfell Hall*, because the relative realism of Charlotte's *Jane Eyre* requires a protagonist who gently pushes the boundaries of Victorian femininity, while the satirical approach of Anne's *Tenant* provides literary cover for a protagonist who so extremely caricatures Victorian femininity that she behaves unreasonably, thus highlighting the unreasonableness of Victorian gender ideals. The works of both Brontë sisters are recognized for their value to the feminist literary canon because of the ways they challenge Victorian ideals of womanhood.

The Conversion of Potassium Organotrifluoroborates to Organoborohydrides: Gaining Access to New Reducing Agents

Joshua Barker

Eric Abbey, Chemistry & Biochemistry

Organo borohydrides are used as reducing agents in synthesis. The ability to tune their reducing power by attaching different functional groups makes them of great interest to synthetic chemists, however synthesis of these compounds has been restricted by current methods because of limited functional group compatibility. Using organotrifluoroborates as starting material solves this problem as they can be made with great variety of functional groups attached to the boron. The conversion from organotrifluoroborates to organoborohydrides is straightforward and allows for the synthesis of a number of novel organoborohydrides that were previously inaccessible. One such compound, sodium N,N-diethylaminomethylborohydride, was identified as having potential as a strong reducing agent. The ability of the nitrogen to coordinate to the borane product after the loss of a hydride stabilizes the borane product, making it favorable for this reaction to occur. Calculations have been made to support this hypothesis and current research is exploring the properties of this compound and its relatives.

Modes of Production and the Political Revolution: What Bernie Sanders Means for the Declining American Worker

Kenton Bell

Majid Sharifi, Government

Bernie Sanders and Donald Trump are an affront to the American political establishment. Their popularity represents a startling backlash to the status quo, fueled by dissatisfaction in the American political system and diminishing prosperity. In the roots of the diminishing state of the American worker are structural elements of the capitalist system, driven by the goal of ever increasing efficiency. To achieve this goal, technological innovations and corporate consolidation are driving the workers out of the workforce, and the oligarchic political and legal system have worked to keep them out. This means that to revitalizing the American economic and political systems in the long run is going to require deep, radical changes to American institutions.

Underrepresentation of Latino/as in Politics

Teresa Bendito

Martin Garcia, Chicano Education

Although Latinos are the biggest minority group residing in the United States, they are the most of underrepresented in politics. According to the U.S. Census, there are 54 million Latinos living in the United States yet less than seven percent of voting members of congress are considered Latino/a. In this study I argue that anti-immigrant laws such as Arizona's S.B 1040 are the product of underrepresentation of Latina/os in state and federal legislatures and an overall lack of diversity in our political institutions. By using statistics from the U.S. Census Bureau and peer review journal articles, this paper will prove the underrepresentation of Chicana/os Latinos in politics has detrimental consequences in the enactment of policies that disproportionately affect this community.

An Analysis of Water Soluble Vitamin Content in Above and Below Ground Biomass of *Claytonia lanceolata*, a Wild-Foraged Food

Gwen Bode

Robin O'Quinn, Biology

Shifting from foraged foods to agriculture as a primary source of human nutrition, resulted in a dramatic alteration of the human diet in so short a time frame that our genome has had insufficient time to adapt. To curb the risk of diet-related ailments, recent initiatives advocate diets that recreate the foraging lifestyle of our ancestors. One important foraged food plant in Eastern Washington is the Western Spring Beauty (*Claytonia lanceolata*). Our study seeks to better understand nutritional variation in a wild-foraged food, by assessing population level nutritional values in the above and below ground biomass of *C. lanceolata*. We hypothesize that nutritional content varies significantly by population and that vitamin content in above and below ground biomass varies based on their biologically different roles. To test these hypotheses, we sampled representative populations from the distribution for *C. lanceolata* and conducted vitamin assays using high-performance liquid chromatography with ultraviolet detection (HPLC-UVD) to determine the approximate vitamin content by population.

Optimal Cueing Strategy for Lumbar Multifidus Activation Measured By Ultrasound Imaging

Cliff Bonnell-Jones, Sarah Founds

Patricia Nelson, Physical Therapy

Low back pain (LBP) is a problem 60-80% of the population will experience during their lifetime. The lumbar multifidus (LM), a deep back muscle, and the transverse abdominis (TrA) muscle of the deep abdominal wall are thought to play a crucial role in lumbar stability and management of LBP. Weakness and altered use of the LM and TrA has been demonstrated in patients with LBP. Therefore, treatment that includes strategies to promote LM and concurrent TrA activation are beneficial. To date, there are no studies that report the best way to help patients achieve activation of the LM or TrA. The purposes of this study are to identify which verbal cue causes the best activation of the LM and which cues cause concurrent activation of the TrA and LM. Comparison of these results to unpublished research on cues that best activate TrA in isolation will also be included.

Executive Power: Cold War Era & Post-9/11

I'sabeau Bozanich

Majid Sharifi, Government

As political atmosphere changes over time, it is safe to assume the federal government changes as well. This change can be accredited to many instances throughout the last century, specifically war. The question is, how has times of conflict effected the powers of the executive and legislative branches? The mechanism of change throughout time as a pattern is not what I intend to examine; rather I will focus on two specific eras: post-WWII Cold War era, and post-9/11 and the “war on terror.” Both of these eras hold significant instances for foreign policy, opening the door for the analysis of actions taken by both the executive, legislative and judicial branches in terms of power and authority. From this viewpoint, I intend on focusing specifically on the metamorphosis of presidential prerogative in order to determine if the theory of an executive power increases through active or passive deference to the president during times of non-traditional conflict, such as the Cold War and the War on Terror.

Research Design and Methodology in Race and Culture

Maria Briseida Rios

Martin Meraz Garcia, Chicano Education

The study of Race and Culture is often overlooked and under appreciated by mainstream quantitative researchers despite being a field that offers a lot of insight on race relations. Qualitative researchers are often undermined by quantitative researchers who claim the discipline lacks measurable outcomes and objectivity. In this research design I use peer reviewed academic sources to explore the use of scientific methodological techniques in Race and Culture that measure up to other mainstream disciplines in both depth and rigor. Among the techniques being discussed in this research design, I include a theoretical and methodology framework with a unique sampling system and an IRB approval. Finally, the intent of this study is to make qualitative research in Race and Culture more attractive to the general student population who will benefit from its explanatory power.

Dispelling Latino Stereotypes of Success

Maria Briseida Rios

Martin Meraz Garcia, Chicano Education

Latino success can often times be a double edged sword. When Latino/as are successful, they are seen as the pride and joy of the communities they come from, but they are also pointed out by skeptics as proof that Latino struggles are not real. Members of the privileged class like to cite the accomplishments of some to invalidate the structural barriers other Latina/os face in their quest to achieve success. This is problematic because Latinos of all ages continue to experience structural biases, making them feel inadequate, and thus perpetuating the vicious cycle of failure. Using academic peer reviewed sources and interviews approved by the EWU IRB as empirical evidence, this study reveals the psyche of Latino youth regarding the struggles they face in their higher education journey and quest for opportunities to reach their perceived success. The primary guiding question for the study is, how does privilege, stereotypes, and perceived biases affect Latino students' view of their own success?

Sources of Excess Nitrogen to Pine Draw Watershed, Turnbull National Wildlife Refuge

Ashley Bromberg

Camille McNeely, Environmental Science

Although the Pine Draw watershed boundaries lie primarily within Turnbull National Wildlife Refuge and the land remains largely undeveloped, it exhibits signs of nutrient loading. The goal of this study is to trace the sources of excess nitrogen entering into the Pine Draw watershed. A probable source of excess nitrogen is the nearby Philleo drainage. Groundwater can often be a source of excess nitrogen, particularly in areas of agriculture where fertilizers are used. Water samples were collected and water quality (dissolved oxygen, pH, temperature and conductivity) was measured for both drainages. Samples were taken periodically at twelve sites in the Pine Draw and Philleo drainages from February- April 2016. Water nutrient analyses include ammonia, phosphorus and nitrogen concentrations. The next step is to determine levels of naturally occurring stable isotope tracers in the samples, which allows us to identify agriculturally sourced nitrogen. Results of this study provide useful information about nutrient cycling in the region, contributing to improved land management.

Diminishing Returns: The Loss of the Saudi Oil Tool and its Impact on Regional Power Politics

David Broussard

Kristin Edquist, International Affairs

Beginning in early 2014 the global oil market began to take a downturn. Production outpaced demand and as a result the price of oil began to fall. By 2015 oil prices continued to fall to levels not seen in years with no signs of a rebound. The price of oil fell below the cost of production for many producing states. Popular opinion is that Saudi Arabia has undertaken the policy of market saturation in order to edge out new producers. This explanation only presents the outward effect of the larger Saudi strategy. This is a case of Saudi Arabia trying to salvage the only effective means it has to influence geopolitics and global economics. It is continuing its high production levels despite large losses in reserves because it has so far been ineffective at achieving its goals in the oil market and within the Middle East. These efforts are essentially destroying the economic base the country is built upon and Saudi believes that they can outlast their competitors is flawed. This presentation will offer an analysis of Saudi Arabia's political and economic reality.

Differentiation: A Plan and Argument for its Application in College Composition Classrooms

Leah Butterwick

Justin Young, English

My presentation addresses the gap in research surrounding differentiation and its use in the college composition classroom. Differentiation is a practice that allows teachers to address individual student's needs inside a diverse classroom. While differentiation has been used in a variety of subjects and for a range of ages, I noticed a lack of research surrounding its use within college level composition courses, such as Composition 101 or College Writing. This presentation follows my research surrounding this gap, wherein I review the uses of differentiation in a variety of different classrooms and analyze key pieces of research to construct a practical approach and argument for the use of differentiation in college composition courses.

Chicano Immigrants' Role in the Economy

Amelia Byrd

Martin Garcia, Chicano Education

Using peer review sources, this study will evaluate the role Chicano immigrants play in the United States, specifically the impact they have in our economy. This work will focus on the underground labor force that exists within this community and explore the advantages and disadvantages of this practice. This study will also look at the factors that produce this underground economy and who benefits the most from this practice; the employer or the worker. Finally, this work will address the best solutions on how to encourage this underground work force to come out of the shadows.

Gender and Sexual Conformity

Alyx Christophe

Theresa Martin, Psychology

Sexual minorities who conform to heterosexual social norms of behavior experience decreased bias and harassment but have lower overall mental health than those who are open about their sexual or gender orientation. This paper identifies how 365 survey respondents, men and women, heterosexual or not, and 18 to 55 years of age, conform to gender and sexual identity norms. Information is provided detailing bias and harassment type and indicates those who don't identify as very male or very female actively conform to societal norms of behavior to reduce or eliminate experiencing bias from others. This research indicates a moderate correlation between age and conformity with those over 40 showing higher conformity scores. Additionally this research provides baseline scores for types of active harassment such as using derogatory comments (fag and pussy) indicating how this type of bias is used and who does it. Surprisingly, males indicating a less than strong sense of maleness often are perpetrators of this active and damaging harassment.

The Link Between Israeli Border Policy and Palestinian Poverty: Politics of Apartheid

Emilee Coblentz

Majid Sharifi, Government

Some scholars argue that Western superpowers such as the United States and Great Britain have historically provided the diplomatic means to ensure there is not Arab mobilization against the state of Israel, going as far as to support strict border policies and help the creation of Israeli settlements in order to maintain security of the Arab states. Other scholars and Arab states argue that because of the creation of these border closure policies, tens of thousands of Palestinians have been restricted from working, going to school, and receiving medical care, spiraling the Palestinian economy into the worst poverty conditions it has ever seen. This paper will specifically examine the West Bank and Gaza, dissecting Israeli border policy of the 21st century and defining its relationship to Palestinian poverty.

The Existential Ennui of Rick and Morty: Using Wubba Lubba Dub Dub as a Starting Point for Philosophical Inquiry

David Collins

Christopher Kirby, Philosophy

This project has two primary purposes. After providing a brief background, attention will shift to examine the Adult Swim program Rick and Morty and will argue that one of the catch phrases of Rick Sanchez, “Wubba Lubba Dub Dub” is very similar to one of the original positions of existential philosophical inquiry. Finally, this work will explore in detail the anti-authoritarian and anarchist principles personified in Sanchez, ultimately arguing that he embodies much of the traditional anarchist ethic.

Jay Fox: The Life and Times of an American Radical

David Collins

Joseph Lenti, History

This presentation will explore the life of Jay Fox and asks fundamental questions about both his character and the nature of the evolution of the radical left in the United States. Fox was an anarchist turned communist who was involved in nearly every significant revolutionary moment in the history of the radical left in the United States. From the Haymarket affair in 1886 where Fox was shot by the police to his providing overnight lodging for Leon Czolgosz less than a month before he assassinated President William McKinley, this lecture will address not only these incidents, but a host of others. All of this will be couched in terms of a larger question, that being, “what happened to the radical left in the United States?”

Copy, Paste, Repeat: The Appeal and the Appall of Appropriation

Remelisa Cullitan

Barbara Miller, Art

Appropriation in the Arts can be a useful tool that artists use to communicate with their audience. By using familiar images or objects, artists can imply references to their audience like a codex of information if the appropriation is known by the viewer. By comparing and contrasting the extreme spectrum of appropriated appropriations in the arts, successes and failures will be highlighted and discussed. Two pairings of artists who used appropriation and their counterparts who appropriated from them are Marcel Duchamp and Sherrie Levine, and Cindy Sherman and James Franco.

The Pay-Performance Connection for CEOs in the U.S. Pharmaceutical Industry: A Statistical Sensitivity Analysis

Seth DeNardi

Shelley Fan, Professional Accounting & Kelley Cullen, Economics

As public scrutiny intensifies over the growing difference between the wages of low-income and high-income earners, executive compensation has increasingly become an issue of interest. It is important to see from an efficiency and value-added perspective whether highly compensating CEOs leads to increased company performance or if CEOs are over compensated. Similarly, pharmaceutical companies receive scrutiny related to the high price of their lifesaving medications. The purpose of this study is to define the connection between the compensation received by CEOs in the U.S. pharmaceutical industry and the performance of the firms these executives operate. This research focuses on the pay-performance connection in the pharmaceutical industry while drawing from methodologies and advancements made by scholars researching executive compensation. The controversy of executive compensation and pharmaceutical companies' revenue structures make this research of unique interest. The primary statistical model used in this paper is a differences and differences model.

Fostering Multi-Modality Literacy Through Art & Film

Sony De Paula

LaVona Reeves, English

Digital composing environments force writers, readers, and texts to change. "Today, more than ever before, attention is being given to the role of the arts, multi-modality, and new literacies as they relate to research and practice in English language arts classrooms and operate within 21st century literacies" (NCTE.org, 2015). They urge us to consider postmodern views of reading and writing through different voices, different lenses, and different technologies—to go beyond print media. The author reports on a writing unit requiring students to select, analyze, and present works of art to increase their own multimodal literacies. This is a qualitative multiple case study done in composition classes at EWU. It is the data source of the author's master's thesis.

A New Paradigm in Stored Password Security

Benjamin Donnelly

Carol Taylor, Computer Science

In the field of cybersecurity a major area of interest is located in the security of the password. Specifically, in the security of the password at rest (in its stored state). Everyone in the world it seems, is aware of the necessity of the creation and use of "strong" passwords. The origin of the need is found in the method through which most passwords are stored. Specifically passwords are pushed through a one way mathematical function that makes it impossible to retrieve them from within the output. However, an attacker may (if he gains access to the output of the function) make guesses as to what the input was. If he finds the correct input, he will receive the same output, and therefore know the plaintext password. I have an algorithm that makes use of an advantage of the defender to put an end to all offline password attacks. If my algorithm was the one used to store your password on your favorite website, you wouldn't need a complex password. Just about anything would do. Here is a link to a previous presentation I gave on this subject: <https://youtu.be/GfyM8IFkjo8>

Universal Balloon Gripper

Bradley Dragt

Donald Richter, Engineering

I constructed a universal gripper using the school's 3D printer. The gripper functions using a balloon filled with small aggregate particles. To lift objects, air is removed from the balloon with a vacuum line. This solidifies the aggregate in the balloon into its current shape and is used to lift the objects. To release them, air is blown back in using compressed air. This allows the gripper to lift a wide variety of objects with complicated geometries using frictional forces by achieving a large contact surface. This presentation will demonstrate the capabilities that this gripper possesses, and show its advantages compared to standard pneumatic grippers.

Developing a Real-World Drug Analysis Experiment for Forensic Science Students

Tari Dunlap

Peter Bilous, Chemistry & Biochemistry

The objective of this study was to design and develop a laboratory experiment for forensic science undergraduate students. This is meant to simulate drug analysis techniques to identify controlled substances (illegal drugs) in drug-related cases. Color-based chemical tests and/or microcrystal tests are first used to indicate the presence of a controlled substance. These tests are followed by drug separation techniques and subsequent identification using instruments such as the GC-MS. To mimic a real-world drug sample, procaine and diphenhydramine were substituted for cocaine and methamphetamine, respectively. Seized drug samples often contain adulterants (legal drugs) and diluents (filler material) in addition to the controlled substance. Caffeine and acetylsalicylic acid were used to create drug mixtures. Scott, Marquis, and gold chloride with hydrobromic acid reagents along with solvent-based drug extraction procedures were used. Our results indicate that the analytical approach was effective under a variety of conditions and varying drug mixtures.

A Re-description of a Basal Deinonychosaur from the Early Maastrichtian of James Ross Island, Antarctica

Ricardo Ely, *McNair Scholar*

Judd Case, Biology

We offer a re-description of an early Maastrichtian, gigantic, basal deinonychosaur from James Ross Island, Antarctica. In 2004, researchers found the remains of a theropod previously referred to Dromaeosauridae, a clade which includes Velociraptor and Deinonychus. Referral to this clade is not supported in our phylogenetic analysis due to certain aberrant morphological features. Turner et al. (2012) notes the lack of a distal, ginglymoid articulation of metatarsal II signifies a placement at least within Deinonychosauria, but not Dromaeosauridae. The specimen also lacks an enlarged ungual of the second pedal digit. Our phylogenetic analysis reveals this theropod to be the basalmost deinonychosaur, a sister taxon to the clade Troodontidae+Dromaeosauridae. However, bootstrapping supports a trichotomy of this theropod, Troodontidae, and Dromaeosauridae with 77% of bootstrapping replicates. We also offer the first biostratigraphic placement of most Campanian-Maastrichtian, non-avian Antarctic dinosaurs and can determine the contemporaneous dinosaur fauna of this theropod.

Spokane Regional Health District Food Consumption Study at Spokane Public Schools (SPS)

Keisha Engley

Jeni McNeal, Physical Education, Health & Recreation

Spokane Regional Health District worked with Spokane Public Schools Nutrition Services to conduct a plate waste study in four elementary schools in Spokane: Garfield, Indian Trail, Moran Prairie, and Stevens Elementary. Three assessments were collected in each of the four schools for a total of 12. The elementary schools were selected based on their involvement with scratch cooking, WSU Extension Food Sense program, and principal approval. The purpose of this study was to assess if various interventions to promote salad bar and hot entrees can influence food consumption of fresh fruit and vegetables and targeted hot entrees. 15 interviews were also conducted with elementary teachers in the schools to assess for different variables contributing to student food consumption and to assess for barriers and opportunities to promote healthy eating in schools.

Do Amount and Medium of Nutrition Education Affect Athlete Nutrition Knowledge in Big Sky Conference Athletes

Kendell Erickson, Josh Petersen, Joe Cordes, Hideto Nakazato

Garth Babcock & John Gerber, Physical Education, Health & Recreation

Nutrition is a key factor in an athlete's performance and success in their sport(s). Nutrition requirements change as physical demands on the body are altered. Even with the importance of proper nutrition being a widely known issue, some athletes are still either too under-educated or under-motivated to maintain proper nutrition. The availability of knowledgeable staff and faculty members to guide athletes can cause or exacerbate these issues as athletes adjust their eating patterns and habits to their training plan. The study was performed via an internet survey sent to the subjects. Selection criteria included athletes between 18 and 25 years of age who are current NCAA athletes and part of the Big

Sky Conference. Surveys were scored and evaluated and graphs and tables were developed to assist in finding and showing any correlation, or lack thereof, between nutrition education amount and tools and the actual nutrition knowledge of the participating athletes.

China and the AIIB vs. Japan and the ADB

Johneil Paul Espora

Kristin Edquist, International Affairs

In June 2015 the Asian Infrastructure Investment Bank (AIIB) with 50 member states was created. These members pledge to support the AIIB and finance the increasing infrastructural needs of Asia. Yet there has been an established financial institution in the region since 1966, the Asian Development Bank (ADB). The ADB has similar goals and approach to solving Asia's regional infrastructure gap. Where both banks differ is a result of their respective dominant sponsor state and how they direct the finances of the banks; China's role in the AIIB and Japan's direction of the ADB. This presentation is a structural comparison of the two banks, including how China and Japan influence the banks. The new AIIB is China's attempt to establish a multilateral financial institution and to increase its political influence relative to its economic abilities. The ADB has been a product of Japan's economic influence in the region and represents its attempt to change its image regionally post-Pacific War. This presentation will conclude by discussing the future of the two regional banks.

Dual Language Programs in the U.S.

Tanya Esquivel

Martin Garcia, Chicano Education

Using peer review sources, this research project explores the benefits of dual language programs and how continuing them will enhance the cognitive skills of both English and non-English learners. In this research I do a comparative analysis of state testings' scores in specific regions with bilingual programs versus schools that do not offer them. My investigation also looks at the skills elementary students gain when they are part of these programs as they engage in a cultural exchange at a young age. My hope is that with this project I am able to contribute to the academic conversations on the positive outcomes that come about as a result of adopting dual language programs for Chicanos and non-Chicana/os alike so they are able to excel in a multicultural society.

The Legacy of Language Choice across Generations & Raising Bilingual Children: A Single Case Study

Maria Estrada-Loehne

LaVona Reeves, English

This single case study aims to identify choices that a Spanish-speaking American woman made when raising 8 children bilingually—both in Mexico and the United States, while maintaining her own Spanish and fostering the maintenance of the heritage language and culture in the homes in both countries. This Mexican American single parent discussed her own education and teacher preparation in Mexico, graduating from high school in the 1940's in Mexico, though she was born in the U.S.. Heritage language maintenance and ethnic identity are major areas of investigation, and the author identifies themes found in the interviews with the subject and provides relevant cultural information, employing ethnographic methods and applying constructivist grounded theory.

Gaming and Language Education

Justin Felts

Michael Zukosky, Anthropology

Language loss and the resulting loss of culture are very real problems faced by indigenous groups. To be successful language revitalization programs require stimulating and engaging curriculum materials. This exploratory paper will argue that there is support for video games as an effective tool in language learning programs because they give language learning an immersive atmosphere of interaction. Through discussions with language Educators and students from Eastern Washington University, educators from the Spokane Salish School, Lewis and Clark High School, as well as curriculum developers and video game developers, I explore the potential for video games as a viable pedagogical form of introducing culture and language to students. By embracing modern technologies like video games that are immersive, indigenous educators facing language and culture loss have the opportunity to digitally create an interesting, immersive setting for students to engage their culture and language.

Finite Element Analysis to Optimize the Shot Peening of 7050 Aluminum Using ANSYS

Shane Fisher

Awlad Hossain & Heechang Bae, Engineering

The fatigue life of a mechanical part depends greatly on its surface conditions since fatigue failure originates at the surface. In industry, the shot peening process offers increased fatigue life in Aluminum alloy 7050-T7451 by increasing surface hardening effects and imparting a compressive residual stress layer. The downside to the peen forming process is that by applying too much or too little, one can actually decrease fatigue life due to high surface roughness and excessive residual tensile stress. To better estimate the optimum amount of shot peening applicable to the surface of 7050 aluminum, we have developed a numerical model using the finite element software ANSYS. The model will determine the residual stress induced by single and multiple shot impacts and then be validated against experimental residual stress measurements previously obtained. Then, further analysis will be conducted to investigate the residual stress for different impact velocities in order to better understand the relationship between shot velocity and the resulting compressive residual stress profile.

Current Issues and Developments in Psychology with Regards to Latina/o Americans

Rachel Giddings

Martín Meráz García, Chicano Education

Past research has shown that the Latino community experience mental illness differently than other populations, and they are largely under-served by mental health professionals. This work explores the underrepresentation of culturally diverse individuals seeking and utilizing psychological services due to the lack of cultural sensitivity of therapists; cynicism by mental health professionals, and an outlook that therapy can be used as an oppressive tool by those in power (Sue & Sue, 1999). In short, there is much apprehension towards traditional therapeutic and intervention models in which most therapists have been educated on are based on and designed to meet the needs of a small part of the population—this being White, male, and middle-class persons. Using peer review sources, this study addresses current challenges faced by Psychology as a discipline and discusses new ways to help mental health professionals effectively treat and work with the Latino community.

Diet Swap: is Trading Native Prey for Invasive Species Impacting Predator Fitness?

Adam Gilles

Ross Black, Biology

Native predators have been known to adapt to introduced prey species and sometimes act as a control on those species, suppressing the non-native populations. The brook stickleback (*Culaea inconstans*) is a non-native fish that has invaded a number of waterways on the Turnbull National Wildlife Refuge (TNWR), displacing native fish and amphibians. The wandering garter snake (*Thamnophis elegans vagrans*) may be utilizing brook stickleback as a food source. This study explores the influence of the brook stickleback on three populations of garter snake by examining individual fitness and feeding behavior at different levels of exposure to brook stickleback. When comparing individual snake fitness, inferred with a scaled mass index, no significant differences were found amongst populations. During predation trials, snakes regularly exposed to brook stickleback had lower successful predation rates than those formerly or never exposed. The presence of the brook stickleback in the TNWR, while altering the behavior of the wandering garter snake, does not significantly impact its fitness.

Redefining History and Identity Through Toni Morrison's White Girl in Beloved

Aubra Godwin

Paul Lindholdt, English

In her 1992 critical work, *Playing in the Dark*, Toni Morrison argues that the American identity relies on the presence of a constant “other” to contrast accepted identities against. A black character, story, or representation then may function as a tool for understanding white identity. Morrison uses parallel identities to offset the white other in her fiction, the character of Amy Denver in *Beloved* serving as a ready example.

Education, Technology and the Older Adult

Amanda Gonzales

Heather Robinson, Communication Studies

Biological aging is a given and as humans we can expect varied but inevitable physical and neurological changes as the years pass. However, despite commonly held perceptions on aging, these changes do not necessarily forecast a decreased ability to learn new things. Through continuing education and the acceptance of technology as a vehicle for the concept of life-long learning, older adults can see continued development much later in life than common thought typically allows.

By analyzing the comparison between research and my own experiences, this study is designed to dispel myths and stereotypes regarding the role of technology in helping older adults to thrive in harmony with 21st century demands. The results indicate that thoughtfully structured teaching methods applied within an environment that fosters elder-specific learning methods will facilitate an interest in and increased acceptance of new technology for older adults.

Latina/os and Mental Health

Ashley Gordon

Martin Meraz Garcia, Chicano Education

The human brain is the only thing that makes the human body more than a squishy shell but mental health is put very low on many people's scale of importance. In the United States, 34% of the population is affected by common mental health issues. According to the U.S Census Bureau 17.1% of the population or 55 million Chicanos/Latinos live in the U.S. constituting the largest ethnic groups in the country, yet very little information exist about their mental health. Many studies show sociocultural variables reflecting the need for mental healthcare within the Latina/o community. Using peer review sources, this study will address the importance of mental health care within the Chicana/o Latina/o community and will provide ideas on how best to offer these critical services in a productive and welcoming way.

Teacher Perceptions of Nature, Existence, and Relevance of Music Technology Programs in U.S. Public High Schools

Charles Green

Sheila Woodward, Music

This research project investigated high school music teacher perceptions of the nature, relevance and significance of music technology programs and the use of technology to teach music in their own schools. Numerous school music programs in the United States use technology to teach music and offer students instruction on music technology. Investigating teacher perceptions of music technology instruction and use of technology in music education in a selected county in the Inland Northwest provides valuable information that may inform future development within the field in this region. Interview technique allowed for in-depth responses to open-ended questions that were reported in narrative style.

Latino Labels

Hayden Griffith

Kyle Thiele, English

In this paper my goal is to research the financial, social, and cultural limitations that Latinos and Hispanics are faced with, and to not only discover the source of these anti-Latino/Hispanic sentiments, but explore possible solutions for the identity paradox that plagues our nation.

Multiracial Feminism

Alexis Griggs

Mimi Marinucci, Women's & Gender Studies

Intersectionality, a coined term by law professor Kimberlé Crenshaw in the early '90s, is a term that many of us in the field of Women's & Gender Studies are familiar with. Crenshaw revolutionized feminist theories by challenging the notion that racism and sexism are not mutually exclusive, but rather they overlap. But what about those of us who have multiple racial identities? My research on multiracial feminism does not challenge or critique Crenshaw's work on intersectionality but rather expands on it and showcases the unique challenges of people with multiple racial identities whose narratives are often overlooked or untold.

It's Too Late: Marshal McLuhan's Predictions and Sherry Turkle's Observations of American Culture within the Information Age

Christopher Grim

Dana Elder, English

This presentation attempts to use phenomenology theory to come to conclusions about the media environment within Marshall McLuhan's *The Medium is the Message* and to draw parallels to the more current text of Sherry Turkle's *Alone Together: Why We Expect More from Technology and Less from Each Other*. By examining the environment of media in terms of characteristics, limitations, and changes, the research leads into the user experience of said environment to accessibility, influence, and changes to the self. The specific qualities examined are visual/spacial, compel culture, disengagement, speed, and illusion.

Teaching English in Africa: An Auto-ethnography

Carli Guenther

LaVona Reeves, English

Teaching English in Ghana was part of the author's undergraduate education, and working with children in makeshift outdoor schools in rural areas inspired the author to become an English teacher. The auto-ethnography is a close-up view of the cultures, materials, approaches, classroom dynamics, learners, and co-teachers. This work reflects the spirit of Suresh Canagarajah's and Gloria Anzaldúa's reflections on their own language learning and teaching. Addressing issues of cultural imperialism and liminal passages--as defined in "Revising Liminality in the Context of...Teacher Preparation.." by Cook-Sather, the author reflects on her experiences crossing borders of race, class, gender, and white privilege while suggesting ways to prepare to teach cross-culturally and sharing photographs and cultural artifacts.

Deaf Chicanos

Cristina Gutierrez

Martin Meraz Garcia, Chicano Education

This paper focuses on Chicana/os who are hearing impaired and the struggles they face. This research project will address the different styles of sign language and different kinds and levels of hearing loss. Using peer review sources I provide statistics on the number of Chicana/os in the United States with hearing disabilities and narrow it down to the number of Deaf Chicana/os in Washington state. In this paper I will address the additional challenges faced by deaf Chicana/os as they attempt to communicate with their families who only speak Spanish; most of the time a sibling is compelled to learn sign language and become their personal interpreters, which brings its own sets of challenges. This paper also addresses the high demand that exist for trilingual interpreters. Finally, this paper address the challenges Chicana/os Latina/os face in acquiring an insurance the properly covers the needs of the hearing impaired in their community.

Pressure Felt by Collegiate Athletes to Return to Play; Differences Between the Collegiate Divisions

Alexa Haberlack, Shawna San Nicolas, Reece Hayes, Chandler Batiste

Garth Babcock, Physical Education, Health & Recreation

Many collegiate athletes experience difficulty managing both intrinsic and extrinsic factors when returning to play. The return-to-play process for the athlete following an injury can result in a variety of psychological factors. Many athletes describe their return-to-play experience with a mix of fear and anxiety (Yang, 2014). Elite athletes today experience more pressure to return-to-play more quickly following an injury compared to past athletes (Bauman, 2005). This study will examine the presence of pressure and the psychosocial factors during the return-to-play process among division I, II, and III varsity athletes. Understanding the psychological and psychosocial influences surrounding the return-to-play process can illuminate the importance of social support and the motivations and fears of the athlete (Bauman, 2005). This knowledge can therein aide athletic trainers in facilitating rehabilitation of the injury and the mind to ensure both a physically and psychologically sound recovery.

Latino/Chicano Immigration

Kayleb Hall

Martin Garcia, Chicano Education

Documented and undocumented immigration is one of the most talked about and contentious topics in America today. Some believe that undocumented immigrants cause taxpayers to pay billions into healthcare, housing, education, welfare, and other programs they consume without contributing to it. However, others believe that immigrants, whether undocumented, or documented, greatly contribute to our economy in positive ways. Using peer review sources, this study explores the legitimacy of these claims. Finally, this work explores the push and pull factors causing Latin American immigrants to cross the Mexico-U.S. border and settle in the United States.

China's Currency Devaluation: A Case Study of the Controlled Yuan Exchange Rate

Wade Hampton

Kristin Edquist, International Affairs

The devaluation of the yuan, also known as the renminbi, has been a contentious subject within Chinese-U.S. relations, in which China has been accused of being a “currency manipulator,” due to a managed exchange rate policy controlled by China’s central bank. It can be argued that China’s currency policies are not entirely self-serving, considering any fluctuation in the yuan has a global ripple effect that is not just relational to developing countries, but to leading nations as well. The emerging complexities linked to this issue, such as economic integration, trade protectionism, financial crises, and shifts in economic hegemony signals a new era within the international political economy, given the level of international interdependency, and pace at which change is occurring. An examination within the traditional realist, liberal, and historical materialist theoretical perspectives, and an expansion upon contemporary understandings is necessary to assess the current situation, as well as to predict possible future outcomes.

Self-portraits of Rembrandt van Rijn

Michael Haynes

Barbara Miller, Art

An exploration of Rembrandt’s self-portraits and the profound impact they seem to have on many viewers. Conclusions are made by analyzing the early and late works, and by gathering, interpreting, and comparing research from scholars and historians.

Warning: Graphic Content

Kenna Herdrich

Ryan Simmons, English, Spokane Falls Community College

The graphic novel is a relatively new form of art and as such faces derision by advocates of older forms. In an overview of three widely acclaimed works, I argue that graphic novels have different strengths and limitations than either film or traditional novels, and that it is this difference from other media that legitimizes the form.

Kiev vs. Moscow: Economic Combat between Russia and Ukraine

Egan Hiatt, *Honors Scholar*

Kristin Edquist, International Affairs

Russia and Ukraine have been locked in an ongoing series of border skirmishes since spring of 2014 when Russia annexed the Crimean peninsula. Since then, Ukraine has taken action to try to lessen its dependency on the Russian economy, while Russia attempts to use economic pressure to force Ukraine away from the European Union. If Ukraine successfully makes a break with the historical regional power, this may have serious implications for Russian hegemony in Eastern Europe.

Voice in Writing: Going from Expressionistic to Social-Epistemic Rhetoric

Nahla Hoballah

Justin Young, English

Voice is a concept that gets discussed in both the expressionistic and social-epistemic rhetoric. Proponents of expressionistic rhetoric argue that teaching voice is essential in allowing students the power of self-discovery and self-expression. In “Reconsiderations: Voice in Writing Again: Embracing Contraries,” Peter Elbow presents the ongoing discussion on whether it is effective to teach students the use of voice in writing or not. He argues that “we need the different and complementary insights we get from each kind of reading” (184). Meanwhile, the social-epistemic rhetoric proponents use the concept of voice as a means for empowering students to be active participants in the discourse community. Although some scholars, such as James Berlin, might argue that expressionistic and social-epistemic rhetoric have completely different goals, I attempt to argue that not only do they both have a similar goal but that the concept of voice is similar in both rhetorics. In most scholarly articles, scholars often create clear boundaries between each of the rhetorics where they are mutually exclusive. The purpose of my research is to examine whether teaching voice can allow for the merging of both the expressionistic and social-epistemic rhetoric. In other words, I’m examining how the use of voice in writing can allow students to learn through self-examination and reflection while also critically examining their interaction in relation to “the discourse community” in which they exist and “the material conditions of existence” (Berlin 488).

Questioning Critique: Bias in Peer Review

Lauren Hohle

Justin Young, English

Using research completed through the English 511 pedagogy course, I will discuss how race, class, gender, and other biases can rewrite text, and produce drastically different feedback. Drawing on both academic studies and personal experiences, I will explore the implications to composition and creative writing classrooms, as well as literary journals. I hope to illuminate the necessity of examining current peer review and reading practices, as well as offer a few solutions to these problems.

Deadpool: Hero or Reckless Vigilante

Corey Horn

Kevin Decker, Philosophy

In contemporary pop culture there is a current rise in interest centered around superheroes and with changes on the genre, our conception of what it is to be a hero continues to be molded. With the new Deadpool film, one is left to ask what defines a hero, and can Deadpool be considered one? Or is he merely a mercenary or vigilante? Philosophically, what is the difference? Joseph Campbell famously wrote *The Hero with a Thousand Faces*, in which he outlines what makes a Hero's journey, and the criteria for what makes a journey. What I will call into question is the idea of the hero's reward. As Joseph Campbell puts it, the hero receives a reward for their journey though the hero is not influenced by the reward. I will highlight two separate kinds of rewards outlined by Alasdair MacIntyre, intrinsic and instrumental value, showing that true heroes do not do "good" for reward but for the sake of "good," receiving intrinsic reward they would otherwise live without. Through analysis I will hold Deadpool to these strict criteria and hope to discover if we can truly consider Deadpool a hero.

Safety Voice for Ergonomics: Methodology of a Randomized Control Trial

Ryan Houser, Darren Anderson, Leah Mohtes-Chan

Daniel Anton, Physical Therapy

Work-related musculoskeletal disorders (MSDs) commonly occur in the masonry trade. These MSDs can lead to missed workdays, long-term impairments, or unanticipated early retirement from the trade. Many masons lack knowledge about ergonomic solutions and risk factors for MSDs, as well as the soft skills required to appropriately respond to work environments and practices that are unsafe. The SAFETY Voice for Ergonomics program (SAVE) proposes to use blended learning principles to integrate progressive health and safety training strategies into the current masonry apprenticeship program curriculum in order to reduce musculoskeletal injuries. SAVE e-learning modules on Ergonomics and Safety Voice were created based on focus group feedback and were pilot tested at two masonry apprenticeship training centers. A randomized controlled trial (RCT) will be conducted to further test the viability of this training in reducing MSDs. The purpose of this presentation is to describe the methodology of conducting the SAVE RCT including methods, outcomes, and discussion.

Natural Resource Recovery in the Pacific Northwest

Rosalie Huff-Waters

Paul Lindholdt, English

My presentation is on Recovery of Natural Resources in the Pacific Northwest. What began as a research paper on salmon recovery and dam breaching led to the discovery of a promising trend that has implications for the recovery of far more than salmon. Since the building of the hydroelectric dams on the Columbia River, the epic salmon runs of the past have been diminishing annually. Litigation has been the past method of trying to force companies to spend the money to help the salmon. This has been costly, time-consuming, and ineffective. Cooperation among all the entities involved is a new method of addressing this issue that is already showing results.

Defining America: Chicano/Latino Influence

Hope Jackson-Doney

Martin Meraz Garcia, Chicano Education

With the 2016 Presidential Elections, immigration has become a hot topic of discussion among the presidential candidates as they debate what actions to take with respect to undocumented population residing in the United States. This study examines the ways in which Latina/os and immigrants have defined and redefined the American culture. Using peer review academic sources, this work explores the cultural development of Latina/os in the United States and how this group constitutes a critical foundation of American society. This work will illustrate how the United States is known as the melting pot of cultures for many generations and Latina/o immigrants as many other European immigrants have bought into this idea by adopting many of the core American values, yet we deny them the right to call themselves Americans. Finally, this study addresses the importance of the continued acculturation process of Latina/os in the United States and how they will continue to enrich the American identity.

Rocket Propellant Research

Wayne Johnson

Martin Weiser, Engineering

Rocket propellant research has been conducted at EWU for the last 4 years. Recently, testing has been scaled up for use at the Intercollegiate Rocket Engineering Competition (IREC). Research includes: propellant formulation, catalyst development, scalability, casting methods, grain geometry, and most recently dual propellant motor design. While the majority of early research was based on small scale motors to characterize propellant formulations, larger static motor testing is currently being investigated to confirm simulated models as well as to prepare for flight tests. Motors developed as a result of this research helped EWU win 3rd place at IREC 2015, reaching a final altitude of 10,656-ft. Research is currently being done on dual propellant motors to use at IREC 2016 in an effort to reach 22,000-ft.

The Art of Simple Computers

Bobby Johnson

Inoue Atsushi, Management Information Systems

This project is meant to show what kind of creative work can be done with a simple computer and some electronic devices. I plan on giving examples of various creative works and projects that people have done with just a simple computer called a Raspberry Pi and with other devices like microcontroller-based kits called Arduino uno. I also plan on giving a brief description of my own creative work that I have made with a Raspberry Pi computer.

Workplace Romance

Mitchell Koonz

Theresa Martin, Psychology

There is a cultural zeitgeist that romantic workplace relationships are considered taboo. To many individuals professional interpersonal romantic relationships within a corporation are assumed to produce negative consequences in the overall functioning of the company (James, 1989). However, Gutek (1990) found that about 77 percent of both men and women report being in a workplace romantic relationship. The current study will investigate this phenomenon with a particular interest in determining if younger employees see the workplace as an acceptable partner-finding environment. It is expected that as age increases the number of romantic workplace relationships will decrease; that female participants will have more negative attitudes toward workplace romances; that type of organization and level of prestige will be correlated with the frequency of workplace romances; that length of employment is negatively correlated with workplace romance; and that differing personality types will affect the incidence of romantic workplace relationships.

The Ghosts of Colonialism: Examining Representations of Spirits in Post-Colonial Texts

Laura Lango

Beth Torgerson, English

This paper will examine the representation of ghosts within post-colonial texts, such as Helen Oyeyemi's *The Icarus Girl* and Lois-Ann Yamanaka's *Behold The Many*, among others. These post-colonial works utilize magical realism in order to present to the reader the tradition of the colonized culture pre-colonization through the incorporation of spirits or ghosts. Tellingly, these ghosts can only be handled effectively through traditional knowledge and cultural practice, and Westerners remain almost without exception ignorant and unhelpful in the management of these spirits. The inclusion of these ghosts is not only a vehicle to present non-Eurocentric worldviews, but also an exorcism of the author's own cultural ghosts. These ghosts represent the "traditional" way of life in several ways; their antagonistic yearning to be reunited with the protagonist are usually well intentioned but ultimately impracticable, and their insistence on creating a tangible impact on a world oblivious to their existence are easily analogous to the cultural tensions any post-colonial society faces.

Latina/o Education and Its Effects on Overall Job Success

Megan Lee,

Martin Gracia, Chicano Education

Young Hispanics today struggle with the American education system, especially those that are foreign-born. This is because Latina/o immigrants are part of an education system that is inadequate to meet their educational needs. A common problem immigrant's face in the classroom is their inability to communicate. Also, teachers are not trained to communicate effectively with their student populations. For example, only 2.5% of teachers who instruct bilingual students have a degree in ESL- bilingual education (Hispanics: Education Issues). As a result, Latina/o immigrants score lower on standardized tests and the shortcomings associated with an inadequate education system reflect the type of jobs held by this population. In the United States, Latina/o's make up a sizable percentage of the total workforce, however they still face job discrimination and income inequality in natural resource, construction, and maintenance jobs (service occupations). Using peer review academic sources, this study explores how the American education system is ill prepared to meet the needs of foreign-born

Life Experiences Related to Student Success

Anthony Leggett, Stephanie Aguilar, Raquel Ramos

Theresa Martin, Psychology

The purpose of this study was to investigate if first-generation students had more coping mechanisms than continuing generation students. Parental education was used to determine whether a student was a first-generation student or a continuing generation student. If neither of the student's parents went to college, they were considered first-generation. If one or both parents attended college, then the student was considered continuing-generation. Students coping strategies (adaptive) or mechanisms (maladaptive) for coping with stress was primarily measured by the Brief Cope Scale. All participants completed Eastern Washington University's demographic questions, Collin's (1996) Revised Adult Attachment Scale, Trice (1985) Academic Locus of Control Scale, Mermelstein, Kamarack, and Hoberman's (1985) interpersonal support evaluation list, Eastern Washington University's On-Campus Academic Support survey, 2 questions that were locally developed and related to academic support, the Perceived Stress Scale (Yumba, 2008), and Carver, C. S.'s (1989) Brief Cope Scale.

Moral/Ethical Choices in the Post-Apocalyptic World of "Fallout 4"

Olivia Manusia

Julia Smith & Michael Zukosky, Anthropology

Exploring the advantages and disadvantages of different moral systems is important to humans because many of the social problems facing us are complex and challenge black and white moral thinking. The video game world of "Fallout 4" is a vibrant, complex, and engaging way that people in the U.S. today interact with a variety of virtual human characters and social situations that are ethically problematic. In this project, I use my personal experience as a player, interviews with other players, and a literature review to explore how the particular post-apocalyptic setting of the Fallout universe functions to create complex scenarios in which the player must make difficult decisions about solutions to problems that rarely have a clear right or wrong answer. The hypothesis that I will test is whether or not playing Fallout allows players to role-play these choices and see the benefits and consequences of ethical decisions such as weighing the good of the many vs. the good of the few, and relate these choices to social problems outside the game.

Exploring Methodologies in Feminist Rhetoric

Elizabeth Matresse

Lynn Briggs, English

This project seeks to determine if the research methodology proposed by Jacqueline Royster and Gesa Kirsch in their book *Feminist Rhetorical Practices* can be used to teach Feminist Rhetoric at the undergraduate level. In order to test and demonstrate the use of the methodology, a study was conducted in which students learned and applied the methodology to the works of Hildegard von Bingen, a twelfth century abbess. The study analyzed the critical thinking and writing of seven upperclassmen participants. Students were asked to engage in discussions and exploratory writing on the subject of Kirsch and Royster's methodology and two passages from Hildegard von Bingen's *Scivias*. I propose that not only can this methodology be used to teach Feminist Rhetoric, but that Hildegard von Bingen is an ideal subject for students who are learning to utilize this methodology.

Perceptions of Oppression: White students of Eastern Washington University

Ariel Mcmillan, McNair Scholar

Dr. Julia Smith, Anthropology

After conducting a survey last year about how student's perceived diversity and the racial climate on EWU's campus following a series of racially charged events, it became clear that further investigation of racial attitudes was needed. As some students do not have the scaffolding for articulating their full world view, the most accessible measure is the common themes discussed with friends and family as well as their concepts of race on campus. Responses were analyzed to further understand the gaps between the experiences and understandings of marginalized groups on campus and those of white students. Students reported a lack of comprehensive and cogent classroom facilitation but more importantly a lack of the skill development needed for dialogues and interactions outside of the classroom. White victimization mentality in the face of "increased diversification" and denial of racism from students were present in a high number of surveyed students and this research attempts to explore those ideas further.

Latino Immigration to America

Teddy Mead

Martin Garcia, Chicano Education

With Latino Immigration to the United States standing as such a controversial topic, it seems appropriate to shed light on reality. Especially for people who are unsupportive of Latino/Chicano families in the U.S., the facts need to be discussed. The collective focus of this paper is to address the facts behind Latino immigration into the United States, as well as its effects on American culture. Utilizing data, statistics, scholarly articles, and peer-reviewed research, this paper will discuss the following: 2016 presidential candidates' views on Chicano/Latino immigration into the United States, how their views compare to reality, and how immigration betters America as a whole.

Developing a Support Center without Borders: Enhancing Services for Students without Documentation

Edith Melendez, McNair Scholar

Christina Torres-Garcia, Chicano Education

College students without documentation (students) face many academic support hardships. 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 contributing to society. Unlike college students with authorization, they have added stress and pressures relating to overcoming financial, social, and educational challenges. Despite these 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 support services specifically tailored to college students without documentation. As such, the recommendations outline in this essay suggests that creating a center designed will empower students and better support them.

Tactility in a Robotic Gripper

Ashley Mills, Arin Preston

Donald Richter, Engineering

This robotic gripper incorporates tactility to make it capable of applying a variable force, as defined by the user, to pick up objects of varying fragility. The gripper uses several sized force sensing resistors (FSR's) to be able to provide the tactile component, or its ability to "feel". The FSR functions based on the active sensing area differentiating the amount of resistance that is in the circuit. When there is a high resistance in the active sensing area this means there is no force being applied on FSR and, therefore, no objects in the gripping area. As an object is picked up, there is a greater amount of force against the FSR, lowering the resistance and allowing the FSR the ability to tell how much force is being applied. The gripper is then controlled by an Arduino Mega control board, which is used to control a continuous motion servo that, in turn, controls the drive gear moving the gripper's fingers. When the control board receives an input from the FSR that achieves the required force, the gripper will cease closing and continue with the next step in the code.

Feminine Voices of Confession in Creative Nonfiction and Young Adult Literature

Lydia Mulligan

Rachel Toor, Creative Writing

The confessional narrative form is not a new invention. From the first century with Saint Augustine to the modern celebrity memoir craze, we have seen voices daring to confess their deepest sins and darkest thoughts. This paper seeks to shed light on parallels between the modern female voices in the contemporary creative nonfiction genre and in first person young adult literature. Both genres are rife with controversy, derision, and routinely snubbed as being too intimate. This paper will seek to show that this intimacy and confession is not a negative trait but a successful attempt at human connection and should be celebrated as a step forward in both literary genres.

Cruel Captivity: Americans Held Prisoner during the American Revolution

Rochelle Mullin

J. William T. Youngs, History

It can be argued that the American Revolution was our country's first civil war. A civil war, by its very nature, is perhaps the cruelest of conflicts, dividing nation, neighbors, citizens, and families. Americans captured by the British during the fight for independence experienced this cruelty firsthand. They were considered rebels and traitors, not enemy combatants, and subjected to treatment considered utterly barbaric by 21st-century standards. American POWs could expect foul water; starvation; rotten food; epidemics of typhus, dysentery, smallpox, and scurvy; lice and ticks; exposure due to lack of clothing and blankets; and harsh punishments. Many thousands of Americans died while held captive, more than 11,000 in New York alone. Sites of confinement included prison ships, jails, sugar houses, colleges, churches, and any other place deemed suitable for incarceration, both in America and abroad. One unfortunate American diplomat was even held in the Tower of London! The thousands who perished, as well as the survivors, are the forgotten heroes of our nation's first civil war.

Latino/as in the Labor Work Force

Vanessa Murillo

Martin Meráz Garcia, Chicano Education

This study focuses on the overrepresentation of Latino/as in farm labor jobs and the factors causing this trend, including the lax employer verification requirements. Using peer review sources, this work assesses the extent to which the federal government is complicit by allowing certain industry sectors such as the agribusiness with less stringent employment verification requirements than the technology or scientific industry. The study shows this bias application of laws create a form of exploitation and an underclass of Latina/o immigrants locked out of better job opportunities. Finally, this research points out to DACA, the executive order issued by President Obama as evidence of this claim.

Remix Theory

Josias Navarro

Travis Masingale, Design

Have you ever heard of something being “derivative?” Many folks would call it a lack of originality, but really all this means is the creator’s influences are too obvious. Everything has influences, many of which the creator may not even be aware of. In a time in which nearly everyone understands what the keyboard commands CTRL(Command) + C and CTRL(Command) + V mean, it is becoming increasingly important for creatives and non-creatives alike to discuss remix culture. This presentation will explore the creative process, remix, and originality with reference to research of published works and real-world examples from education and industries including film, design, advertising, and music.

Understanding U.S. Racial Tensions in the 21st Century

Taylor Newquist

Martín García, Chicano Education

This study takes a sociological outlook on the reasons Latin American immigrants migrate to the United States. The study will uncover the racist outlook and stereotypes Americans feel toward this particular immigrant group whether they be documented or undocumented. Using academic peer review sources, the study uncovers the factors that produce these negative attitudes towards this outgroup and sheds light on best practices to reduce racial tensions between them. Among these strategies include cracking down on extreme political rhetoric that incites prejudicial attitudes and potential violence.

Attitudes and Motivations of Spanish Heritage Speakers

Diana Ocampo, McNair Scholar

Miguel Novella, Modern Languages & Literatures

This research aimed to discover Spanish Heritage Speakers' attitudes and motivations in regard to studying their heritage language. A heritage speaker is a person who is raised in a home where a language other than the dominant language of the community is spoken and is perhaps proficient in the heritage language and the dominant language. This research was set to discover what motivates Spanish Heritage Speakers to study their heritage language, as well as how this motivation fluctuates from their experience in the classroom. Using a questionnaire adapted from Gardner's Attitude Motivation Test Battery, 33 students enrolled in a Spanish for Heritage Speakers course at Eastern Washington University were surveyed in order to further understand their attitudes and motivations. Participants completed surveys that measured their language backgrounds and ethnic identity. A proficiency test for Heritage Speakers was used as a measure of learning success. Statistical analysis showed that Spanish Heritage Speakers were motivated by integrative motivation, rather than instrumental motivation.

The Voting Rights Act of 1965 & Latina/o Voter Registration

William Paaga

Martin Garcia, Chicano Education

This study explores how minority provisions in the Voting Rights Act of 1965 affected Latino voter registration a decade after it was actually passed. Signed by then President Gerald Ford, it helped thwart discrimination against "language minorities", who at the time, were being kept from voting even a decade later. This research will focus on how certain English language proficiency requirements negatively affect Latina/o citizens and their right to vote. Using peer reviewed sources, I analyze how and why Latino citizens with low English language proficiency do not vote at the same rate as those Latino citizens who are well integrated within the English language and political culture. If the extension of the Voting Rights of 1965 requires jurisdiction to translate voting materials to Spanish, and even give Latinas/os political power, why is the voting rate so low? This work will demonstrate that the Voting Rights Act of 1965 had a significant positive effect on the voting rights of Latinas/os and their overall political participation; creating that welcoming atmosphere.

Momentum Term for the Modified Spectral Projected Subgradient Method (MSPS)

Breeanna Page

Frank Lynch, Mathematics

The phenomenon of Zigzagging of Kind I is present in pure subgradient optimization algorithms when, at an iterate p_k , the subgradient direction s_k forms an obtuse angle with the previous movement m_k . Our goal is to identify and correct this phenomenon for the Modified Spectral Projected Subgradient method. We do this by adding a proportion of m_k to s_k ; this proportion is called the momentum term and is denoted by τ . Also, we conduct numerical experimentation showing improved numerical results when compared to those of the original MSPS algorithm.

“Professor, could you do me a favor?” – Differing Student Expectations of Professors Based on Gender.

Chloe Pedersen, Joseph Fountain, Karly Wedde

Amani El-Alayli, Psychology

The purpose of this experiment is to examine the expectations of students for their professors, and specifically if those expectations differ between male and female professors. Although students may rate male and female faculty similarly, they maintain expectations for gender-normative behavior (Bachen, McLoughlin & Garcia, 1999). Students view female professors as more nurturing, and expect them to behave accordingly (Bennett, 1982). Students consequently may be more likely to ask special favors of female professors, such as emailing lecture slides or accepting late work. Thus, we suspect that students may react with more annoyance or disappointment if the requested favors are denied by female professors than by male ones. We also expect that students would be more likely to persist with their requests for favors when they are denied by a female professor than by a male professor. We are in the process of data collection but anticipate having enough data for analysis in the near future.

Introducing English While Maintaining Russian as a Heritage Language: A Single Case Study

Stan Pichinevskiy

LaVona Reeves, English

The single case study of a Russian American child born into a bilingual family, where both father and mother were fluent in Russian and English. The parents made a conscious decision to teach their child Russian before she entered an English school and began learning English. From birth, she was exposed to conversational Russian and was addressed only in Russian by parents and most relatives. She also was read to and watched movies in the Russian language for richer input. However, she did not receive a formal education in Russian until she was three years old, when her mother began instructing her in Russian for speaking, reading and writing. By age five, the subject was slowly introduced to the English language for basic conversational skills and vocabulary to help her in kindergarten. The focus of investigation is how the child felt about being bilingual and learning English later than her classmates in school. Further, the child explained how she felt "special" as a Russian speaker, though English appears to be dominant for academic purposes.

Alexander the Great and Aristotle's Philosopher King

Mica Pointer, Honors Scholar

Georgia Bazemore, History & Christopher Kirby, Philosophy

Alexander III of Macedon has often been regarded as the prodigal student of Aristotle, acting on and bringing into fruition his tutor's ideas of what it is to be a good ruler. While this was fulfilled in part with regards to Alexander's battlefield prowess and his embodying a god-like status as ruler, there are many other ways in which he falls short of Aristotle's ideal philosopher king. Such examples include disregarding the advice of his men and being guided more by passion than by reason. In this paper, I will assess evidence for both of these positions with regards to how Alexander both did and did not fit Aristotle's idea of a perfect ruler as described in his Politics.

Sidewalk Spielbergs: Panopticon Police State and Superior Protection

Victoria Polanco-Harper

Matthew Hodgson, English

What are we willing to give up in order to be protected? We hear about inappropriate Police-Civilian interaction, often in the context of violence. Could something prevent that violence?

Police, in the course of normal and extraordinary duty should be actively monitored by the use of body worn video (BWV). The act of continuing to watch, of surveillance, changes not just short term behavior, but more importantly long term behavior. It changes the mindset of the person being watched. This is called the Panopticon Effect. In this presentation, I argue that in the case of Police-Civilian interactions, Jeremy Bentham's Panopticon provides an apt context for the way in which Body Worn Video can diminish instances of police harassment and brutality. It allows civilians to hold police accountable and for police to hold each other and themselves accountable for the actions that they take while on duty. However, for the Panopticon to really work, they must not just be watched, but watched continually. They'll behave if we're watching.

Motivations for Academic Achievement from Latina/o Undergraduates

Jose Razo, McNair Scholar

Martin Garcia, Chicano Education

Latina/o college students are at the center of discussion regarding a growing concern over retention rates; extensive research has been conducted, highlighting institutional and social factors that influence student motivation to continue their education. Academic research has produced studies showing a clear parallel between K-12 dropout and retention rates at 4-year universities. It is important to examine the institutional incentives for improving motivational patterns for academic achievement through a pedagogical lens so that educators may be of greater help during their preliminary undergraduate studies. The purpose of this research is to identify how Latina/o college students are motivated to attain academic achievement. Utilizing CRT, this study focuses on assessing the institutional factors that motivate a Latina/o student to persist through their undergraduate academics. The methods for this research was based on a qualitative approach. Ultimately, the research goal was to improve the approach schools take in reaching students, hoping to cultivate stronger relationships.

Rage Against the Anthropocene: Salamanders Equipped with Plastic Antipredator Responses to Non-Native Fish

Renae Reed

Ross Black, Biology

Within the Anthropocene, invasive species have played a role in up to 30% of extinctions. Many native prey species are unable to recognize or respond to new predators, while prey with plastic antipredator responses are better able to adapt. We examined amphibian antipredator adaptations in the context of a non-native fish. We exposed long-toed salamanders (*Ambystoma macrodactylum*) to cues from native predators and a non-native fish, brook stickleback (*Culaea inconstans*). Salamanders decreased activity in response to native predators (-10 to -28%) and increased activity in response to fish (+15%), unless fish were fed a diet of salamanders (-11%). After repeated exposure to salamander-diet fish, salamanders

were then able to label the fish as a threat and respond with decreased activity (-12%). Reducing their time in the water with the predator, six times as many exposed salamanders reached the final stage of metamorphosis than the control group. When faced with a non-native predatory fish, amphibians are well suited to give answer with plastic responses in behavior and life history.

Anchor Babies

Jennifer Rogers

Martin Garcia, Chicano Education

This study explores section 1 of the 14th Amendment, which grants automatic citizenship to every child born on U.S. soil regardless of the immigration status of their parents. Through primary documents and peer review journals, this study explores the claims of what some immigration restrictionist term as “anchor babies” and the rights they have under the U.S. constitution. I first assess the impact this population has on our society and the claims made by anti-immigrant groups who believe children of undocumented immigrants born in the U.S. should not have the same rights regardless of the constitutional protections of the 14th Amendment. Finally, this study will address the economic contributions of undocumented immigrants and how contrary to the claims made by right wing media and immigration restrictionist, they more than make up for any resources used up by their “anchor babies.”

American Dream V. Reality

Alexandra Romjue

Martin Garcia, Chicano Education

The “American Dream” of acquiring a college education is not a realistic goal for every citizen in the United States. Today a college education is becoming a necessity and Latino citizens are not provided with the same opportunities that Caucasian students are. This study looks at the college education gap among Latina/os and compares the college graduation rates between Latinos and Caucasians. Using peer review sources, the study assess the impact of this education gap on job opportunities, wages and overall earning potential and quality of life among Latina/os and Caucasians. Finally, this work aims to raise awareness among uninformed Americans of the inequality still occurring in the the United States’ as a result of the education gap that exist between Latina/os and Caucasians.

Earthly Artworks

Dana Rowland

Barbra Miller, Art

Landscaping that adds to the grandeur of the buildings they represent or the ideas they stand for are earthly artworks just as worthy of our intrigue as the landscape paintings hanging on walls worldwide.

Flirtation Styles and Tactics among College Students

Erika Ruppelius

Theresa Martin, Psychology

Dating and flirtation are activities that can be complex and uncertain. Flirtation can be defined as communication with the intent of initiating sexual or romantic relations with another person; this can also be called courtship initiation. Scales have been developed to categorize flirtation into several different groups of styles. The purpose of this study was to determine if male participants were more likely to have a more physical flirtation style, and use this along with more aggressive tactics in scenarios where they would be seeking a flirtatious interaction; additionally, this study investigated if there were potential differences between heterosexual and non-heterosexual groups for self-reported traditional flirtation style. Participants included students from Eastern Washington University who filled out a survey through the university's SONA system. This data was then analyzed to determine flirtation styles individually as well as in comparison between groups such as gender and sexual orientation.

The Greece Financial Crisis

Jennifer Sacco

Kristin Edquist, International Affairs

Regional integration can force the bailout of other states that are facing political and economic crisis such as Greece. One state's economic and political complications can have a rippling effect on the entire integrated system. The crisis in Greece is a combined failure and the poor decision-making by all parties has exposed the flaws within the Eurozone. This paper will discuss the events that led to Greece's financial crisis and will question whether the Troika's exacting response gives Greece reason to exit the Eurozone. The research will focus on mistakes that were made by both Greece and the Eurozone, resulting in the crippling of the Greek population. "How the Greeks resist occupation of their lives by these powerful institutions will set an example for the rest of the world" (Jacobs & Swilling, 2015). Neo-liberalism and Interventionist theories are used to examine the decision of whether exiting the Eurozone or remaining is best for Greece. An exit from the Eurozone would allow Greece to rebuild their economy on their terms, while remaining in the Eurozone offers a sense of security. The management of the Greece financial crisis will not only affect the European Union, but also could have an effect on the entire international political economy.

Latino/a's in the U.S. Media

Edwin Sanchez

Dr. Martin Garcia, Chicano Education

At a time of an extremely negative light placed on Latina/os, primarily Mexicans, due to political rhetoric; using peer reviewed sources, this paper takes a look at how the media has historically portrayed Latina/o Americans not only from a political perspective, but also in the entertainment industry. This includes Hollywood's portrayals of Chicana/os, Latina/os as maids, crooks, gangsters, and drug traffickers, and the consequential view of Latinos in the eyes of the American public. This paper will also look at the disproportionately negative casting of Latina/os in the film and television industry compared to actors of other racial backgrounds. This work also explores the under representation of Latina/o producers and media executives and their comparative success, all the while shedding light on reasons for such a disparity when it comes to the portrayal of Latina/os in media, and why this matters.

Underrepresentation of Latina/os in the Medical Field

Kaisha Sanchez

Martin Garcia, Chicano Education

Underrepresentation of Latina/os in the Medical Field

In the medical field, diversity is lacking; less than half of medical school grads in 2012 were women, and only about 14% from minority groups with 8% being Hispanic (Peterson's Staff, 2013). Using peer review sources, this paper addresses the underrepresentation of Latinos in the medical field and the factors causing it among them not having the capital (social and otherwise) the dominant group possesses to attend medical school. Additionally, the paper also explores why this can inflict implicit racial bias as doctors treat minority groups differently based on ethnicity. Finally, this work explores the benefits that can result from having a diverse group of medical professional serving our communities.

The Economy and Mexican Immigrants

Austin Schulz

Martin Garcia, Chicano Education

This paper will focus on the economic impact that immigrants from Mexico, documented and undocumented, have on the United States economy. In this study, I use peer reviewed sources to show how much immigrants contribute to the economy; with how much the pay in taxes and the wages they earn as they toiled in their respective jobs. Additionally, this study explores the impact Mexican immigrants have on the unemployment rate of native born Americans as well as the U.S. national debt. This study also looks at the impact of undocumented immigration, and the cost/contributions to the US tax payers. Finally, this study assesses the costs to the United States tax payers of engaging in massive deportations of the undocumented immigrants as suggested by Republican candidate Donald Trump.

Feminism and Challenging Gender Roles in Charlotte Bronte's "Shirley"

Charlene Shepard

Beth Torgerson, English

I will be exploring feminism and challenges to traditional, middle class, Victorian era gender roles in Charlotte Brontë's Shirley. Brontë uses names, financial situations, character traits, and relationships to cross gender boundaries. The title heroine Shirley borders on being transgender as she is not only given a man's name before it became a women's name, but she claims masculine titles and experiences financial independence and runs a business and engages in business transactions which were not common scenarios for middle class women during the Victorian era as they needed men for financial support or engage in demeaning jobs such as becoming a governess. Shirley experiences a romantic friendship with Shirley's other heroine Caroline. During the Victorian era, in contrast with today's society's views, romantic friendships were encouraged unless women impersonated men. However romantic friendships were viewed as nonsensical and temporary and not as serious because women still needed men according to Victorian beliefs.

Input/Output Interface for FANUC Robot

Terry Simmons

Donald Richter, Engineering

The first industrial robots purchased for the robotics labs were a brand called FANUC, and when they were purchased the department did not have the money to get the expansions for them that would allow for user input and output. I designed and built a unit that allows for this capability without having to buy the expansions. When I first started this project it was thought that since the robots were only putting out a very small voltage when the outputs were activated, the solution would be some means of stepping up this voltage to levels readable by the other equipment in the lab. In researching how this should be done it was discovered that if the robots have an external voltage applied they switch from sourcing mode to sinking mode and give an output at 24 Volts. With this discovery I was able to create a unit that applies the necessary voltage to the robot controller, passes signals between an input/output block and the controller, isolates these signals to prevent damage to the robot from misuse, and provides power to run any devices connected to the input/output block.

Morphological Responses to Colchicine Induced Polyploidy in *Phaseolus vulgaris L.*

Leonard Simpson

Robin O'Quinn, Biology

As a response to a growing world population, from 1950 to 1980, much research was dedicated to agricultural plants and seeds in an attempt to increase food production. Many experiments were modeled for polyploidy research which has produced foods we eat everyday (strawberries, wheat, corn, bananas, seedless watermelon, seedless grapes, etc..). A popular technique used was soaking seeds or live tissue in colchicine solutions. It was determined difficult, if not impossible with many seeds, i.e. *Phaseolus vulgaris L.*, the common garden bean. In a recent experiment using loquats, researchers were able to tetraploid the living tissue and seeds using colchicine solution immersions. I decided to re-visit *P. vulgaris L.* to determine if immersing seeds in colchicine concentrations would produce polyploidy characteristics. And, if the morphology was different, would those characteristics be beneficial in fruit size or abundance. Two experimental plants produced yellow flowers. All other surviving plants produced a white flower with very little yellow coloring.

I'm Not Going to Write You a Love Song

Beanca Thai

Elizabeth Kissling, Communication Studies

If someone actually reflects on every chick flick, they have seen one thing that can always be observed. It is the same story repetitively, just with different characters. The women will always jump thought hoops to be with the guy that she eventually falls in love with. It makes all the viewers believe in a false notation of love. Which can be dangerous to young females.

Long-term Effects of Burning, Herbicide, and Seed Addition on Invasive Annual Grasses at Turnbull National Wildlife Refuge in Eastern Washington

Cody Thomas

Rebecca Brown, Biology

The effective management of invasive annual grasses (IAGs), such as *Ventemata dubia* (ventenata) and *Bromus tectorum* (cheatgrass), is a major goal for land managers. While many approaches have been proposed to control cheatgrass, relatively few studies have looked at ventenata, a recent invader in the Inland Northwest. Our study investigated the impacts of prescribed burning, herbicide application, and seed addition on ventenata and other IAGs over three years at Turnbull National Wildlife Refuge (TNWR). We hypothesized that while herbicide and burning may be effective at reducing IAGs in the short term, their success will diminish after multiple years. To test this, 99 1 m² vegetation plots were treated in 2012 and plant percent cover and IAG stem count was sampled in 2012, 2013, and 2015. While herbicide and seed addition decreased IAGs after one year, we found no significant difference in IAG count between treatment types in 2015. However, there was a significant decline in overall IAGs from 2012 to 2015, which was likely the result of reduced spring rainfall.

Impact of Intranasal Administration of Oxytocin on Symptoms of Post-Traumatic Stress, Reward Seeking Behavior, and Related Dopamine Signaling in Rats

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 oxytocin treatment on PTSD symptoms as well as reward seeking behaviors and related dopamine (DA) levels. Sprague Dawley rats will be used in three groups to conduct this experiment (Control, Stress, and Oxytocin+Stress). Rats will be trained to expect a food reward in an open field enclosure. The Oxytocin+Stress group will be treated with oxytocin and both the Stress and Oxytocin+Stress groups will be exposed to electric shocking (a model for a PTSD inducing stress). After reward training and shocking, rats will have DA electrodes surgically implanted in their brains. Once recovered from surgery rats will be reintroduced to the open field to assess their behavior and related DA levels. The hypotheses are that oxytocin will decrease anxious behaviors, and increase both reward seeking behaviors and related DA levels.

“Memories of the Silk Road:” A Travelogue

NicholeLa Torre

LaVona Reeves, English

This travelogue details a journey through important sites in Chinese history and culture. The book is intended for use in TESOL instruction for intermediate to advanced-level English language learners. Students can use this book as a framework for their own autobiographical writing to preserve moments in time, special events, or memories. Through the author’s letters to her parents and summaries of each location learners gain knowledge and understanding of Chinese history, culture, and geography, as well as American English colloquialisms. English learners can also use this book to study letter writing, communication, autobiography, cross-cultural experiences and world religions.

Communication and Aging

Brian Trabun

Heather Robinson, Communication Studies

Normal aging is a process that all humans go through. As we navigate through life we tend to think about the present or the near future, but never about our lives when we are in older adulthood (65 years and older). We tend not think of the processed food we are eating, our lack of daily exercise, our stress full and demanding work schedule, or the unconscious preconceived notions we believe about ourselves, and others. During my research, I found how negative and positive stereotypes, as well as attitudes that are internalized at a young age affect our mental and physical health as normal aging occurs.

Steamboat Willie: A Brief Scope of Synchronized Sound and Bestial Ambivalence

Rashad Tyson

Drew Ayers, Film & Pete Porter, Film

In 1928, Walt Disney’s Steamboat Willie debuted as the first Disney animated cartoon with synchronized sound and introduced the world to Mickey & Minnie Mouse. Upon its debut, Disney inadvertently created the traditional representation of “bestial ambivalence”—a concept developed by Paul Wells and illustrated in his book *The Animated Bestiary: Animals, Cartoons and Culture* to analyze the human-animal relationship in media—particularly through the film’s pioneering sound design. This idea is further illustrated through a film technique later termed “Mickey Mousing,” a close connection of synchronized sound and score to action wherein every on-screen motion and action has an accompanied sound effect. This close relationship between sound and image in Steamboat Willie not only innovated the style of early animation but also the thematic representation of the animated character on screen. We can directly correlate this concept to the four different ideological branches of bestial ambivalence: the pure “animal,” the aspirational human, the critical human and hybrid “humanimal.”

Rebels From the Waist Down: An Exploration of Sex and Love in *1984*

Charles Vaught Jr.

Beth Torgerson, English

In *1984*, George Orwell depicts a dystopian vision of London. The novel, published in 1949, is a depressing and unhopeful look at the future. However, at its core *1984* is much more than just a futuristic science fiction tale, it is a sexually tragic love story. Throughout the novel, Orwell represents sexuality in this dystopian society as something that has to be suppressed and ultimately warped into a forced love for Big Brother. The very act of sex for fun is viewed as an act of revolt, and those who participate in it are depicted as insurgents. This distorted view of sex causes the protagonist to despise virginal qualities, which he equates as devotion to Big Brother, provoking him to put whorish values on a pedestal. Finally, sex is shown to be a path that leads to an eventual destruction of the self. By having Big Brother twist the joy and ecstasy out of sex and love, Orwell is giving a warning to future generations: do not let any government overly control the personal lives of its population, for the consequences will ultimately be sexually and politically disastrous.

The Necessity of Minority Ethnic Studies in the American Education Curriculum

Destiny Vaught

Martín Meráz García, Chicano Education

From the very start of the educational career students are rarely exposed to the history, culture, and contributions of other ethnic groups that tie together the American way of life, past and present. Not until individuals reach higher education, more commonly known as college are they introduced to studies that are designed specifically to enlighten the student's knowledge of minorities and other ethnicities in the United States. In this study, I used peer review sources to highlight the advantages of schools that teach ethnic studies classes and the importance of understanding different groups of people at an earlier stage in a student's life. The study will narrow down its focus to Chicana/o studies and the lack of diverse curriculum in the US education system. This work also explores the content taught in Chicana/o Studies wherever it is offer and the reasons for the existing gap in ethnic studies curriculum before college. Finally, this study focuses on how we got to the point of excluding these histories, and how do we redevelop them to enhance young people's knowledge again?

IDEIA and SECTION 504: Special Education and Civil Rights Laws that Impact Students with Disabilities and Their Implications for Social Work Practice and Policy.

Christina Walden

Amanda Reedy, Social Work

This presentation is an overview of the Individuals with Disabilities Education Improvement Act (Special Education Law) and Section 504 of the Rehabilitation Act of 1973 (Civil Rights Law). It will compare and contrast the two laws and provide some interesting facts about them both. This presentation will also cover some of the implications of the two laws for Social Work Practice and Policy.

Dental Fluorosis and Fluoride in Consumable Products

Katarina Wasley

Sarah Keller, Anthropology

The question on whether on fluoride should be added to consumable products has already been a topic of discussion; one criticism that has been offered to the use of fluoride is the incidence of dental fluorosis. Dental fluorosis is when the enamel has, in its mild forms, either visible white spots, flecks, or streaks. Dental fluorosis is caused by the over-consumption of fluoride during the developmental stage of the permanent tooth's enamel. The fluoride that can cause this can come from multiple sources, including such sources as drinking water (either naturally occurring or as an additive), dental products that contain fluoride (toothpaste, mouthwash), or other beverages with water added to them (like fruit juice or soda). Through a review of the literature surrounding dental fluorosis and fluoride, it is suggested that fluoride should remain in consumable products as it helps strengthen teeth in general. However, parents should being careful to monitor the amount of fluoride a child consumes until their permanent teeth have all fully erupted to avoid dental fluorosis.

Re-Examining Tropes of Sexual Violence in Fantasy Fiction

Danielle Weeks

Rachel Toor, Creative Writing

As a genre, fantasy fiction is notorious for including graphic sexual violence, especially for the purpose of furthering female characters' plot lines or character development. Rather than addressing sexual violence as a complex issue that many real women are forced to face, many fantasy writers tend to, instead, use sexual violence as a default catalyst that creates the appearance of character growth in female characters. This presentation will examine these reductive tropes through the analysis of a young adult fantasy novel, *Graceling*, that subverts these tropes while still addressing the real-world issue of sexual violence against women. Attention will be given to how fantasy writers, using *Graceling* as an example, can create complex characters without defaulting to gratuitous sexual violence. Attention will also be given to the young adult fantasy genre, in particular, and the importance of this issue when creating young female characters

A Narrative of Ecocentrism: "A White Heron" by Sarah Orne Jewett

Anna Welch

Paul Lindholdt, English

Sarah Orne Jewett is known to the literary world as a regionalist writer and a pioneer of ecocentrism: a school of thought that values the natural world and its living inhabitants over manmade infrastructure and technological advancement. Growing up at the height of the Industrial Revolution, Jewett was witness to the decimation and commodification of the natural world, including the extinction of the rural way of life of her dear pastoral Maine. Sylvia, the protagonist of "A White Heron" parallels Jewett's upbringing. Sent to her grandmother's rural cottage from a busy industrial town, young Sylvy instantly feels kinship with her wild surroundings. In a deceptively simple narrative woven with arguments for the preservation of nature and the dangers of industrialization, Sylvia's eventual victory over the oppressive influence of an outside force includes a plea from Jewett not to forsake the beauty and wholeness of nature.

Pinball in Purgatory

Michael Williams

Rachel Toor, Creative Writing

My short story, *Pinball in Purgatory*, grew out of an old friend's embarrassing moment involving a racy magazine and his high school crush. One of my biggest challenges in writing the story was deciding on a setting. I tried my hometown of Spokane, a small rural Midwestern town, and finally settled for Boston. The city's Catholic background worked well with my religious themes. I was inspired by the works of Sherman Alexie. His coming of age stories are genuine, bleak, and often funny. My goal was to create a story with colorful characters overcoming anxiety and shame.

Preliminary Results from Range Testing Acoustic Receivers on Lake Roosevelt, Washington

Bryan Witte

Paul Spruell, Biology

Assessing movement patterns provides information to guide management decisions on fisheries. One way this information can be gathered is with acoustic telemetry. Passively tracking tagged fish by utilizing an acoustic receiver array occurs in Lake Roosevelt, a 240 km impoundment of the Columbia River. To better understand tag detections in the array it is necessary to test the distance at which receivers can detect a tag. In summer 2015 we tested 10 Vemco acoustic receivers on Lake Roosevelt. A tag was positioned at three points in four directions (North, South, East, and West) around each receiver and at three different depths (five meters above bottom, midwater, and five meters below surface) for each point. The tag was at depth long enough for 20 possible detections. The number of actual detections divided by possible detections was the detection frequency. Detection frequencies for each point were plotted against distance and modeled with a linear regression. There was a significant negative relationship with detection frequency and distance from receivers ($y = -0.16x + 98.99$, $R^2 = 0.51$, $p < 0.01$). Detection frequency dropped off to 50% at 300 meters from the receiver. Future plans are to continue range tests to determine detection range at receiver locations.

3D Printed Robot Hand Gripper

Branden Wong, Jessie Hulzier

Donald Richter & Matthew Michaelis, Engineering

A robot gripper is an attachment to, in our case, a robot that allows the robot to pick up objects. We will be designing and building a robotic hand gripper that will resemble a human hand in function and aesthetics. This robotic hand gripper will be made to be used by engineering students for various projects and with the ability to mount to the industrial robots within the EWU Robotics Lab (FANUC, Delta, and Adept). The main difference between this robotic hand gripper and a simple claw gripper or suction cup is its gripping versatility. This robotic hand gripper will be able to grab a wider variety of objects compared to simple grippers. Our robotic hand gripper will be powered electrically with 5 servos (one for each finger and thumb), and will use tension from fishing line that is channeled through tunnels that are within the hand to operate individual fingers. The servos will be controlled by an Arduino Uno microcontroller, which will be able to be controlled by the various robots within the Robotics Lab.

An Argument for the Existence of God from Consciousness

Devon Young

Dr. Kevin Decker, Philosophy

Of the many arguments presented in favor of God's existence, one that is not granted much attention (but is slowly resurfacing) is the argument from conciseness. This lack of attention should not be unexpected given the accumulating empirical support for behaviorism and its related fields, in tandem with decreasing belief in a Transcendent Mind within academic circles. Yet questions of "mind" and consciences in numbers outstripping answers remain, leaving some thinkers of a naturalistic background, opposed to any sort of dualistic worldview, questioning the plausibility of strict naturalism. Could there be some truth to the archaic notion of the soul and self? If it indeed exists, how has consciousness formed. Was it through years of evolution? and if so at what point in the timeline? Is simply illusory, as many disciplines within psychology maintain? Or is this apparently immaterial substance formed in resemblance to a Creator who is himself of a similar sort? As such, the discussion at hand seeks to defend that the best explanation for the existence of consciousness is God.

Determining the Effects of Brook Stickleback (*Culaea Inconstans*) Presence on the Turnbull National Wildlife Refuge, Cheney, Wa

Jenae Yri

Joanna Matos, Biology

The introduction of non-native fishes can cause trophic cascades in freshwater habitats. Non-native brook stickleback fishes (*Culaea inconstans*) were first documented on Turnbull National Wildlife Refuge (WA) in 1999 and are spreading through the refuge. The consequences of their presence on the refuge's perennial and ephemeral habitats are poorly understood. From April – September 2015, I compared the abundance of macroinvertebrates, number of invertebrate taxa, dried macrophyte biomass and number of plant species in twelve lentic systems at the refuge. Eight systems have brook stickleback, four of which are ephemeral ("fish/ephemeral"), and four perennial ("fish/perennial"). Four systems are fish-free and perennial ("fish-free/perennial"). The fish-free/perennial lentic systems had the highest macroinvertebrate abundance ($p < 0.0001$) relative to the fish-containing systems, and had more invertebrate taxa than did the fish/ephemeral ($p = 0.01$) and fish/perennial ($p < 0.001$) lentic systems. Macrophyte biomass and species number were higher in the fish-free/perennial lentic systems than in the fish/ephemeral (biomass, $p < 0.0001$; taxa, $p < 0.001$) and fish/perennial (biomass, $p = 0.002$; taxa, $p < 0.004$) systems. The association of lower macroinvertebrate and macrophyte abundance with brook stickleback presence is of particular concern for the refuge because these changes may impact waterfowl nesting success.

Master of None Masters Rape Culture: Using Comedy as Critique

Sophie Zaroyan

Elizabeth Kissling

The term rape culture is a term that was originated by feminists in the 1970's. Rape culture refers to the way society blames victims of sexual assault and normalizes male sexual violence. Rape culture also consists of jokes, imagery, advertising, music and much more. The show Master of None, starring Aziz Ansari, addresses rape culture and other social justice issues such as racism and sexuality. Master of None is a progressive show that tackles these issues from a comedic approach in order for viewers to understand the issues without sugarcoating. In this presentation, I will be

analyzing the term rape culture and how Master Of None addressed the issue by revealing the differences of the male and female experience in the scene I chose to critique. By using structures of television show sitcom, Ansari is able to be persuasive without being heavy-handed.

Patriarchy is in Everything: Women's Bodies, Indian Culture and How Morality Restricts

Minerva Zayas

Mimi Marinucci, Women's & Gender Studies

In today's westernized culture, a women's body is seen as a tool for sex objectification and used in society for consumeristic purposes in terms of a patriarchal context. Women's bodies are being held restricted in terms of their own authority and supremacy. Drawing from feminism and ethics, this paper argues androcentric world views attempts to subjugate and disenfranchise women. The purpose of this investigation is to examine and critique the influence of patriarchy on women's agency to insert themselves in a position to transform social, political and cultural structures within society. Such work is important because it exposes gender oppression and what we can do to challenge and move beyond patriarchal thinking. This can support spaces where women can express and critically analyze the social forces working against their empowerment.

Voice and Identity: How Religion Plays a Critical Role in Chicana Women's Lives

Minerva Zayas, McNair Scholar

Jessica Wills, Women's & Gender Studies

Chicana women are driven away from their voices. Mainstream society and its social structures attempts to strip away Chicana women from their willingness to challenge dominant and oppressive constructs. This reflects on Chicana women when their voice and identity is questioned in ways that reflect on their development of character and voice. This differs when the institution of religion plays a large role in how these women perceive the world. Religion is a major factor that restrains women in being able to develop their voice and identity. This paper undertakes a personal narrative from a feminist standpoint to investigate how Chicana women who are enrolled in institutions of higher education are affected by religious socialization in relation to being able to express themselves in a critical and analytical manner. Future research will focus on future in-depth interviews in order to fully understand how Chicanas' religious upbringings influences their college experience.

Hispanics In The U.S. Labor Market

Sami Zontek

Martin Garcia, Chicano Education

This study focuses on the labor market and Mexican-Americans in the United States. I used peer reviewed sources to fully examine and determine the fairness of labor laws protecting this population. Additionally, the study provides an in depth analysis of unfair labor practices and a comparison of the types of jobs and location in the United States affecting the Mexican-American population in the labor market. My intended audience are those unaware of unfair labor practices who want labor wages to be fair for every working citizen in the U.S., and not be discriminated based on ethnicity. My research findings will inform my audience how to ensure fair labor practices for all, regardless of race or ethnicity.

Poster Abstracts

An Investigation into the Political Landscape of Hillary Clinton Using Cluster Analysis

Aryk Anderson, Shane Olson, Tanner Cook, & Audrey Henry

Dan Li, Computer Science

Finding patterns in large sets of data is a difficult task that is becoming ever more relevant as users create huge volumes of new information every single day. Document cluster analysis is one technique that can be used in order to analyze large sets of text documents. For our project we decided to explore the patterns that could be found in the released emails from the private server of former Secretary of State Hillary Clinton using this technique. By turning emails into bag of words vectors and then using a k-means clustering algorithm, we were able to cluster documents together and find labels for these clusters. By using these techniques we have been able to discover distinct and interesting relationships that tie together the emails in the data set.

The Social and Academic Benefits of Wilderness Based Orientation Programming

Bryan Anderson

Jeremy Jostad, Physical Education, Health & Recreation

The initial student experience when entering in to college can have an incredible impact on the student's level of satisfaction and success at the university. When the first college experience includes the development of positive peer relationships (interpersonal skills) and the development of a sense of purpose (intrapersonal skills), students are more likely to succeed academically and socially. One way the interpersonal and intrapersonal skills associated with social and academic success can be introduced is through a five day wilderness orientation program for incoming first year students. After five days of interpersonal and intrapersonal skill development through the use of intentional relationship building activities in a setting that encourages open and honest communication through shared goals and challenges, students will have a foundation of skills to build on for lasting success. These programs result in increased student satisfaction and higher levels of student retention.

The Effects of Historical Institutions on Economic Growth

Owen Anderson

Nicholas Larson, Economics

This paper examines the effect of institutions on international variations in the standard of living between countries using an augmented Solow growth model. The paper will augment the model created by Mankiw, Romer, and Weil in 1992 (MRW), by further defining total factor productivity by incorporating the impact of historical institutions, such as those created by colonialism, on the cross country variation in standards of living. Using a human capital augmented Solow model, MRW define total factor productivity as being constant because technology across countries is constant. However, total factor productivity can include the effects of institutions and other variables that have a definite effect on the economic growth rate, and standard of living, across countries. Acemoglu, Johnson and Robinson 2001 show that colonial institutions have an effect on current GDP. This paper will seek to look at the effects of colonial institutions through the lens of the Solow growth model.

A Comparison of Water Quality, Physical Habitat, and Biological Integrity of Two Streams Based On Macroinvertebrate Communities

Sultan Areshi

Camille McNeely, Biology

"EWU's Freshwater Invertebrate Zoology course has conducted biological monitoring of two streams, the seasonally flowing Company Ditch, and the permanently flowing Phillips Ditch on Turnbull National Wildlife Refuge (USA: Washington, Spokane Co.) to assess water quality and ecosystem integrity. Nutrients are a worldwide problem contributing to pollution. Nutrients entering into the water bodies feed the growth of algae, bacteria, and other tiny organisms causing a reduction in oxygen, suffocating aquatic life. The purpose of this study is to find out how TNWR streams have changed with time in response to nutrient pollution, and how macroinvertebrates have responded. Macroinvertebrate assemblages were sampled and water quality parameters such temperature, dissolved oxygen, and dissolved nutrients were measured between 2007 and 2013. Previous data indicate high nutrient levels impacted macroinvertebrate communities. Sites will be sampled again in 2016, and integrated with previous data to build a multiyear data set."

Live Video Streaming Using Raspberry Pi and Amazon S3

Ryan Babcock

Yun Tian, Computer Science & Carol Taylor, Computer Science

"The cloud camera has emerged as an important security tool with the recent development of cloud technologies. These cameras are in wide spread use for both businesses and individuals. Before accessing the video stream, however, a client must first access a company server. That server then processes the data, saves it to the cloud, and streams the video through HTTP. The Instant Cloud Camera (ICC) proposes instead to transfer the video directly to Amazon Simple Storage Solutions (Amazon S3) and not require the intermediary server. In order to handle this "serverless" functionality, the ICC requires that the camera component perform more work than the common cloud camera. Therefore, a Raspberry Pi is used to gather content, compress data, and stream the data to Amazon S3. The ICC borrows from the HTTP Live Streaming protocol (HLS) developed by Apple Inc. as its main technique for sending live video data. This will prove to be more cost effective, increase longevity, and provide more independence for the user."

22 Year Old Collegiate Football Player with A Jones Fracture

Mike Ballasch

Parry Gerber, Physical Education, Health & Recreation

On September 7th, 2015 a 22-year old collegiate football player suffered a Jones fracture on his right foot. He was evaluated by the team physician on September 9th, 2015 and different means of treatments were explained to the athlete as well as the healing nature of a Jones fracture. Wanting to continue the football season, he decided on intramedullary screw fixation and went into surgery on September 10th, 2015. Treatment progressed from range of motion exercises to partial weight bearing and then on to full weight bearing. Modalities following exercise regimen included bone stimulator, laser pad on the infrared setting, and game ready. 40 days post-surgery the athlete was evaluated and early callus and healing were found evident, and return to play was granted. He continued the season while wearing a thermoplastic splint around the forefoot. Occasional soreness was reported after games, but overall the athlete is very satisfied with the outcome of the surgery. No further complication has been reported.

Variation in Magnetic Dimensionality of Copper (II) Pyrazine Coordination Polymers

Alyssa Barton, *McNair Scholar*

Jamie Manson Chemistry & Biochemistry

Coordination chemistry was used to design three different copper-pyrazine low-dimensional quantum magnets; Cu(pyz)(NO₃)₂ (1), Cu(NO₃)₂(pyz)₃ (2), and [Cu(pyz)₂(NO₃)]NO₃·H₂O (3). All three systems have Cu-pyz-Cu interactions as well as a Jahn-Teller distortion along a O-Cu-O axis, which impacts their magnetic dimensionality. Thus far, 1 is considered the most successful representation of the one-dimensional quantum Heisenberg antiferromagnetic (1DQHAF) model due to its weak interchain to intrachain coupling ratio of 4.4×10^{-3} and very low ordering temperature (TN) of 0.107(1)K. With the increased spin dimensionality for 3, which is quasi-2D rather than quasi 1D as in 1 and 2, a higher TN of 2.6(1) K is found. We predict that 2 may be an even better example of the 1DQHAF due to stronger intrachain interactions of $J=13.7$ K and likely weaker interchain interactions as compared to 1 and 3. Here we compare experimental data for all three polymers.

Synthesis and Hydricity of Organoborohydrides

Hailey Beal

Eric Abbey, Chemistry & Biochemistry

In the scientific literature borohydrides are known for their ability to store hydrogen and act as reducing agents. The literature has data on organoborohydrides but no reliable procedure to measure the hydricity of these compounds exists. By varying the types of substituents on these organoborohydrides a drastic change in hydricity and reducing power of these compounds is observed. By a procedure developed in our lab we have been able to synthesize a large family of organoborohydride compounds which are then characterized via cyclic voltammetry and the hydricity is estimated via computational methods. We hope to develop a hydricity scale of these compounds to allow for reference of future reductions.

USA Female and Male Commercial Pilots' Views of CRM (Crew Resource Management), Social Desirability, and Safety Locus Of Control

Tabitha Black & Mary-Jo Waterbury

Charlie Cleanthous, Psychology

A gender comparison of USA commercial pilots demographics and views of CRM were surveyed. The Balanced Inventory of Desirable Responding (BIDR) was used to assess impression management (IM) and the social desirability enhancement (SDE). The Aviation safety locus of control (ASLOC) was used to determine whether these pilots held external or internal locus of control regarding aviation safety issues. A comparison of CRM, based on the Federal Aviation Administration's guidelines. Results indicated that demographically the proportion of female to male respondents matches the current ratio of USA commercial pilots. There were no significant differences regarding overall education and total number of communication classes one took. Regarding CRM, there were no significant differences on their views regarding PIC authority, stress, time management, and managing a flight team. The females scored significantly lower on ADM and communications. There were no significant differences on either the BIDR IM or SDE. The females did score higher on the internal subscale of the ASLOC than the males.

Presentation of Desirable Responding In Commercial Pilots: Profile Views and CRM (Crew Resource Management)

Tabitha Black & Mary-Jo Waterbury

Charlie Cleanthous, Psychology

A concern when administering questionnaires is whether the participant is providing information that is accurate. The Balanced Inventory of Desirable Responding (BIDR) was used to assess commercial pilots' responses faking good or faking bad responses. The BIDR has two subscales, the impression management (IM) and the social desirability enhancement (SDE). The profiles were used to compare the respondents' answers to crew resource management (CRM) items. The subscales covered the following themes: Pilot in command authority, communication procedures, flight team management, workload or task management, time management, fatigue, stress, aeronautical decision making and judgement, and affirmative action. Of particular interest were the results on the IM subscale. Comparisons between those high (lying) versus those low on the IM suggest that there were significant differences on their views of the various dimensions of CRM. A disconcerting conclusion is that the high IM scores suggest that the pilots were trying to impress rather than answer truthfully regarding CRM training and use.

Rock Lake: Columbia River Basalt Group

Jessica Blackwood

Chad Pritchard, Geology

As part of a first year experience class at Eastern Washington University a Bruker Tracer III portable X-ray fluorescence gun was used to measure elemental abundances to classify a basalt sample from the shore at the south end of Rock Lake. The approximate northern boundary of the Roza Member, Wanapum Basalts, of the Columbia River Basalt Group (CRBG) has been mapped in this region of eastern Washington. We were also testing the hypothesis that the interbed (Vantage Sandstone) between the Wanapum and Grande Ronde Basalts may act as a preferential basal layer during cataract recession, such as the Palouse canyon upstream of Palouse Falls. A specialized CRBG calibration for light elements (less than 26 AMU) and a second calibration of heavier trace elements were made using in-house standards measured using XRF in the Peter Hooper GeoAnalytical Laboratory at Washington State University. For geochemical discrimination of the CRBG members we use the elemental abundances for Ti, Ca, Sr, and Zr, which correlated with the Roza Member of the Wanapum Basalts.

Obstacle Courses: An Aggressive Twist to Traditional Running

Samantha Braman

Chadron Hazelbaker, Physical Education, Health & Recreation

Recreational distance running (5K and longer) has transformed from what was an endurance sport focused on health benefits and reaching one's personal time based goals to more of an aggressive challenge, focused on completion and in some cases teamwork. Now, there is importance of proving the accomplishment by posting pictures and videos on social media and an even larger importance of event organizers using social media as free advertising. This revolution of running is created by the use of obstacle course races for recreational purposes. While obstacle course racing (OCR) has become a catalyst for social bonding that creates an environment of belonging for participants, the bellicose setting of these events create a perfect atmosphere for thrill violence and play violence as a part of the reversal theory as written by John H. Kerr in *Rethinking Aggression and Violence in Sport*.

Investigation of the Toxic Convergent Evolution Between Amphibians, Avians, Arthropods, and Reptiles in the Inland Northwest.

Alex Breeden & Noah Adnet

Randall James, Institute of Science and Technology, North Central High School

All over the world are cases of toxic convergent evolution between Amphibians, Avians, Arthropods, and Reptiles. The most famous is the convergent relations between the Golden poison dart frogs, formicine ants/beetles/mites of the neotropic area, the *Leimadophis epinephelus* snake, and the *pitohui passerine* bird. Most to all of these convergent links are based around permeability of the Sodium channels (Na⁺). Batrachotoxin is primarily used as the Poison dart frog's defense, this toxin modifies the sodium channel to where the NA⁺ channel is constantly open. The poison dart frog's only predator is resistant due to their unique sodium channel protein. Our question is to see if there are animals in the Inland Northwest that have the same toxic convergent evolution chain like their distant relatives in the neo tropics. To find this we are analyzing Na⁺ channel gene diversity utilizing DNA sequencing and looking at the connections between their trophic relatives DNA and the DNA we will attain here in the inland northwest.

The High Resolution Infrared Analysis of Allene

Mark Bronson

Tony Masiello, Chemistry & Biochemistry

The high resolution (0.0013 cm⁻¹) infrared spectrum of allene (C₃H₄) has been analyzed for the v₁₁ band centered at 352.6 cm⁻¹. Allene is a prolate symmetric top molecule (I_a < I_b = I_c) of D_{2h} molecular point group symmetry. The v₁₁ band originates from an excitation of a vibrational mode perpendicular to the molecular symmetry axis and results in infrared transitions in which both the K and l quantum numbers necessarily change. Over 2150 transitions were assigned to K and J levels extending up to K=14 and J=52, and no perturbations were observed. This vibration is low in energy and provides a reliable way of measuring the ground state rotational constants which can then be used to determine structural parameters for the molecule as well as facilitate determining the energy levels of other higher energy vibration states that are perturbed.

Effects of Heavy Metal Exposure on Clam (*Musculium spp.*) Functional Traits

Chelsea Brown

Joanna Joyner-Matos, Biology

Heavy metal mining in Coeur d'Alene, ID (CDA) deposited pollution that could alter the metabolic allocation of freshwater clams (*Musculium spp.*) endemic to the region. We predicted that exposure to metals would cause the clams to shift their resources away from nonessential functions like activity. We collected clams (N=147) from an un-impacted site in Washington state and exposed them to metal-containing sediment from CDA, to play sand (control) or to a 50% sediment/sand mixture for 40 days. We measured clam survival, climbing and reproduction weekly. Clams exposed to 100% sediment had the lowest survival ($p \leq 0.001$). Those exposed to sediment were unlikely to climb. We measured two metrics of reproduction, the number of extruded juveniles and of brooded larvae. Brooding did not differ over treatment or time ($p > 0.18$). The number of extruded juveniles followed a dose response pattern (p

Modified AFLP Analysis of 16s Bacterial Gut Consortia From *Bombus Impatiens*

Nick Bryant & Kaylee Perich

Randall James, Institute of Science and Technology, North Central High School

North American Bumble Bees have experienced a sharp decline in their population within the past 20 years. Because the Bumble Bee is 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 decline affects our food supply of certain crops but also decreases the average GDP produced by the United States. Many factors can be linked to the *Bombus* decline, however we believe that it is due to the 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 actually present our study uses an optimized and modified AFLP (amplified fragment length polymorphism) technique to explore the gut micro-flora of Bumble Bees. We are applying the AFLP protocol to multiple hives to better understand what diversity exists and how it compares hive to hive and across similar species such as Honey Bees.

Depression, Aggression, and Child Abuse

Michelle Budiman, Rachel Overland, Alla Goleta, Gabrielle Lucente, & Aubrey Weekes

William Williams, Psychology

Our research investigates the relationship between depression, child abuse, and several types of aggression. Proactive aggression is deliberate, manipulative, and dispassionate. Its intended purpose is personal gain by coercive means such as intimidation or force. In contrast, reactive aggression takes the form of impulsive retaliation in response to perceived insult or injury. Reactive aggression is a distinctive trait of hostile, emotionally dysregulated individuals. Both reactive and proactive of aggression are associated with child abuse, though in different ways, but depression is a form of emotion dysregulation, and so our primary hypothesis is that reactive aggression, but not proactive aggression, will be associated with depression. We administered the Center of Epidemiologic Studies Depression Scale, the Childhood Maltreatment Questionnaire, the Peer Conflict Scale, the Reactive Proactive Questionnaire, and the Forms and Functions Aggression Scale to 248 undergraduates. Our hypotheses will be tested using correlational methods. Results and implications will be discussed.

Jack Roosevelt "Jackie" Robinson: How Faith and Family Built the Legend in Major League Baseball

Isabel Burrows

Chadron Hazelbaker, Physical Education, Health & Recreation

Despite the fact that Moses Fleetwood Walker was technically the first African American to play major league baseball in 1884, it is common knowledge that Jack “Jackie” Robinson is responsible for “breaking the color line” in major league baseball in 1947 as a ballplayer with the Brooklyn Dodgers. His legacy, however, would not have been possible if it had not been for his faith and his family, both of which significantly shaped his life and made it possible for him to endure the persecution and abuse that was involved in major league baseball integration. Robinson had several role models in his life that strengthened his faith and character, including, but not limited to, Mallie Robinson, Carl Anderson, Rev. Karl Downs, Joe Louis, and Branch Rickey. My research found that it was because of his experiences and hard-learned lessons from his childhood, education, early career, and family that built his faith and gave him the strength to hold his temper despite the cultural and social resistance he faced.

Climate Effects on the Relationship Between Invasive Annual Grasses and Biological Soil Crust in Eastern Washington

Jarrett Cellini

Rebecca Brown, Biology

The remaining Columbian Basin shrub-steppe ecosystem is threatened by invasive species and climate change, which is expected to shift temperature and precipitation, critical drivers in arid ecosystems. Biological soil crust (biocrust) can limit the spread of aggressive invasive annual grasses in arid regions of shrub-steppe ecosystems, but its effects in semiarid climates are less studied. It is also unknown how biocrust interacts with the recent invader, *Ventenata dubia*. My goal was to determine how the relationship of biocrust and invasive annual grasses vary with precipitation. I documented biocrust and vascular plant species cover at 21 sites across an average annual precipitation gradient (195-461 mm) in eastern Washington. My results suggest that biocrust and invasive annual grass cover are negatively associated and that this relationship is not impacted by precipitation alone. I also found that invasive annual grass composition varies with precipitation. Understanding how biocrust interacts with invasive species will help conserve and restore habitat in the Intermountain West.

Green Infrastructure Concepts: Spokane's South Hill

John Chatburn

Kerry Brooks, Urban & Regional Planning

Green infrastructure (GI) is a method of using natural materials to accomplish tasks normally performed by human create systems. As a part of Community Planning Studio (PLAN 497/88) this project explored applications for GI related to storm water run-off mitigation and treatment for Spokane’s South Hill. This is a timely issue as Spokane implements the Spokane Storm Water Management Plan to come into regulatory compliance. GI can play an important role in protecting the Spokane River and the Spokane Valley-Rathdrum Prairie Aquifer as well as provide a host of other environmental benefits. The project team studied the southwest portion of Spokane’s South Hill roughly encompassed by High Drive,

43rd street, 14th street, and Grand Ave. The project team identified five different possible scenarios for the implementation GI in the study area neighborhood utilizing a GI tools addressing absorption, filtration, and retention of storm water. Harnessing Geographical Information System (GIS) software the project team modeled storm events and the effectiveness of different GI tools.

Case Study of 19 Year Old Women's Soccer Player with Cellulitis

Andrew Cheney, Kendell Erickson, Sarah Gaston, & Madeline Elliott

Garth Babcock, Physical Education, Health & Recreation

Cellulitis is a relatively rare condition but one athletic trainers should be aware of. The purpose of this study is to present the typical signs and symptoms including treatment plans and prevention methods for cellulitis. The infection itself is “opportunistic” in nature, taking any available opportunity to enter the body through breaks in the skin. (7) Generally an individual who contracts cellulitis is asymptomatic for anywhere from a few hours to several days. The most common risk factors for developing cellulitis are previous episodes of cellulitis at the same site, an injury causing a break in the skin, leg ulceration, fungal infection in adjacent tissue like athlete’s foot, and a skin condition like eczema (5, 6,7).

Assessment of Metabolic Disorders in Columbia River Watershed White Sturgeon (*Acipenser transmontanus*)

Alex Choe, Trajan Gering, & Megan Wood

Randall S. James, Institute of Science and Technology, North Central High School

Sturgeon have rebounded from near-extinction in the nineteenth century but from such small inbred founding populations that once-rare deleterious nuclear gene alleles and mitochondrial haplotypes have the potential of being in high frequencies in their population. Thus, we suspect that, due to recruitment failure of juvenile sturgeon populations, maladaptive mutations may have surfaced in some of these isolated populations, potentially preventing the development of the population as a whole. Commonly, mutations in the mitochondrial genome are known to influence the organismal phenotype, especially in the areas of lifespan, fertility, and starvation resistance, which tend to appear later in the organism’s development. Reactive Oxygen Species are known to be naturally produced in the process of oxidative phosphorylation; however, mutations within the electron transport chain could decrease the longevity of the mitochondria itself. Juvenile and adult Columbia River White Sturgeon samples have been sequenced at multiple loci exposing the presence of potentially maladaptive mutations.

The Influence of Feedback on Metacognition

Lisa Chudoba

Danielle Sitzman, Psychology

Feedback is very important to correct errors in memory, yet people do not appear to understand the benefits of feedback (Kornell & Rhodes, 2013). Current research used scaffolded feedback to further explore these findings. Participants studied Lithuanian-English words pairs then took an initial test where they tried to recall the English translation when showed a Lithuanian word. If they answered incorrectly, they were shown the first letter of the English word and asked to generate the correct response. If they answered incorrectly again, they were shown the second letter of the English word and attempted a correct response. This process continued until the correct English word was recalled, or the correct answer was fully revealed. Participants then predicted the likelihood of recalling the translation on a later test, and were asked if they would like to restudy. In contrast to prior work by Kornell and Rhodes (2013), our results suggest participants have some understanding of the benefit of feedback, but may be unable to fully predict how feedback will influence their memory.

16 Year Old Female High School Athlete with Femoral Acetabular Impingement Syndrome

Kayla Clauson, Naomi Eastland, & Destinee Thomas

Garth Babcock, Physical Education, Health & Recreation

FAI (Femoral Acetabular Impingement), is caused by a Cam or Pincer type lesion that impinges on the head of the femur in the acetabulum. The athlete presented in this case study, is a 16 year old high school athlete with unilateral hip pain. She had imaging done on her right hip, initially, which showed a labral tear with a cam-type FAI. After surgery and treatment in the right hip, the patient was diagnosed with a very similar injury on her left hip. The protocol for the second injury was a little different from the initial injury. The point of this research is to determine if the change in rehabilitation protocol was beneficial, or if both rehabs and surgeries would work equally well for this injury.

Genetic Investigation into the Taxonomic Differentiation of the sub-genus *Tuberous Lomatium*

Abigail Colestock

Randall James, Institute of Science and Technology, North Central High School

Lomatiums historically provided a significant food source to the Native Americans who inhabit the sagebrush-bunchgrass steppes of the Columbia River Plateau. Due to the wide variance of morphological features within this sub-family, there has been considerable debate as to the correct differentiation of species within *tuberous Lomatiums*. Three such species, *gormanii*, *piperi*, and *geyeri*, are the focus of this current investigation. Because the intent of gene barcoding is in the identification of the undifferentiated samples through comparison to known specimens several loci have been sequenced for a significant number of each of the three previously differentiated samples. Compared to sequence from a significant pool of undifferentiated samples the results will have the potential to uphold the separation of *gormanii*, *piperi*, and *geyeri* within the sub-genus. Even if such clear separation is present, however, the question of whether these variants represent divergence from a single line or parallel evolution from several ancestors remains unanswered.

Locus of Control and Environmental Decision Making

Lisa Coyle, McNair Scholar

Charlie Cleanthous, Psychology

Most research on pro-environmental behavior (PEB) has approached the topic from a linear attitudinal approach model, often assuming attitudinal change to mediate behavioral change (Kollmuss & Ayeman, 2004). The goal of this study was to contribute to a growing body of evidence that suggests situational factors involved in pro-environmental decision-making can often be a greater predictor of PEB (Kalamas, Cleveland, & Laroche, 2014). Individual differences in subject's external environmental locus of control (EELOC) were examined after the presentation of brief scenarios concerning the topic of water scarcity.

The Man who Saved Baseball

Angel Cruz

Chadron Hazelbaker, Physical Education, Health & Recreation

Knesaw Mountain Landis also known as “the only successful dictator in United States history” and “the man who saved baseball” is an important person in the American sport culture. He's mostly known for his handling of the 1919 Black Sox Scandal. Though he was known for his management as baseball's first Commissioner we must first analyze what got him there, and most importantly what got him the title of being “the man who saved baseball” which led him into the Baseball Hall of Fame.

Reexamining Economic Theory Utilizing an Open Pit Market Experiment

Kyle Damon

Mark Holmgren, Economics

Economic theory states that when an effective price ceiling is introduced, it will create a shortage, and an effective price floor will create a surplus in their given markets. A shortage is calculated by subtracting quantity supplied from quantity demanded, at the price of the ceiling, using the original supply and demand equations. A surplus is calculated by subtracting quantity demanded from quantity supplied at the price of the price of the floor, using the original supply and demand equations. This research is intended to demonstrate that when an effective price control is introduced, this will drive economic agents out of the market, thus shifting the curves and rendering the original curves obsolete. The methodology used to demonstrate this fallacy is data from an experiment ran in multiple economics courses. In this experiment, an exchange market is simulated in the classroom, with the students as the economic agents. All of the determinants of supply and demand are controlled for, and the experiment is conducted for a series of rounds, both with and without the implementation.

Tuning Single-Ion Anisotropy In Molecular Ni(II) Coordination Complexes Containing Imidazole And Pyrazole Ligand Types

Samantha De Abreu, McNair Scholar

Jamie Manson, Chemistry & Biochemistry

While some molecular Ni(II) coordination complexes containing combinations of halide anions and organic ligands are known, truly systematic studies are lacking and often omit fluoride and iodide derivatives. We are especially interested in near-octahedral trans-coordinated NiN₄X₂ systems where X is F, Cl, Br, I and N is a donor atom belonging to an imidazole- or pyrazole-based ligand. The goal is to create high quality single crystals suitable for detailed structural and magnetic investigation. We aim to better understand the determining factors leading to single-ion anisotropy (D) while eliminating exchange interactions (J). Thus far, we have successfully synthesized several of the desired analogs and portions of this work, including X-ray crystallography, UV-Vis spectroscopy, pulsed-field magnetization, and electron-spin resonance will be presented.

Accuracy of Fitbit Surge Heart Rate Versus A Polar Ft1 Heart Rate Monitor

Ryan de Coup-Crank, Brian Kinder, Nick White, Craig Gustafson, Matthew Johnson, Jordan Slemmons, & Chester Jolly

Wendy Repovich, Physical Education, Health & Recreation

Claims have been made criticizing the accuracy of the FitBit Surge, particularly during workouts where heart rate is elevated. The purpose of this exploratory investigation was to assess the accuracy of the FitBit Surge when compared to a Polar FT1 heart rate monitor at varying intensities. Sixteen participants were analyzed while at rest, and on a treadmill at 2.5, 5.0 and 7.0 miles per hour. Resting heart rate was recorded from each device after a five-minute rest period. Each subsequent workload at the various speeds lasted three minutes and heart rates were recorded for each device at the end of each workload. There was no difference in means between the two devices for the resting, 2.5 or 5.0 mph workloads. However, significance was found at the 7.0 mph intensity workload ($p=0.015$). The results indicate that the FitBit Surge is less accurate at higher intensities.

Communication in age

Kaitlin Dessin

Heather Robinson, Communication Studies

Study the communication as we age and different generations.

The Effect of Student-Made Puzzles as a Study Tool on Student Grades

Matthew Doherty

Ashley Lamm, Chemistry & Biochemistry

In order to succeed in science classes, students must know and comprehend a formidable amount of subject related vocabulary. There have been numerous studies on the use of puzzles and games as study tools to better student learning. However, there has been a lack of research into active learning and puzzles which puts the responsibility of learning into the students' hands rather than the teachers. For this study we asked two different chemistry classes to make and use puzzles as a review tool before each test. The test results for individual students will be collected and compared to a control class to determine the effects of student lead learning on their grades.

Indirect Inguinal Hernia Repair on a 19 Year Old Male Football Player

Noah Dorr & Reece Hayes

Garth Babcock & Perry Gerber, Physical Education, Health & Recreation

With increasing knowledge and research within the recent years, indirect inguinal hernias are still hardly seen in an athletic training room. What started out as being diagnosed as a hip flexor strain, a 19 year old male collegiate football was then diagnosed with an indirect inguinal hernia. Although similar in symptomology, an indirect inguinal hernia must be treated very differently than a hip flexor strain. An indirect inguinal hernia is when a part of the intestine protrudes through the spermatic cord opening and into the hip area Causing discomfort and weakness of the muscle. A hip flexor strain is an over stretching of one of the muscles that flexes the hip. This study will examine the process of diagnosis, treatment, and rehabilitation of this injury. This study will also examine why the injury took so long to properly diagnose and the surgery which is required for this injury.

Heavy Metal Contaminants in River Water; Coeur d'Alene, Idaho

Kyle Duckett & Justin Donahue

Carmen Nezat, Geology

Over a century of unregulated mining practices within the Silver Valley of Idaho and Montana has led to the introduction of waste material containing heavy metal contaminants (As, Cd, Fe, Pb, Zn). The presence of many of these elements in large abundance can cause inadvertent effects on aquatic life and associated biota. Contamination has been dispersed throughout the entire Coeur d'Alene River system via fluvial transport and biological interactions. Concern for the river ecosystem as well as potential effects on large human populations downstream have led to an appropriate amount of concern for this problem. Water samples were collected from multiple locations within the Coeur d'Alene River basin in order to gain a further understanding of the heavy metals currently available within the river system. Toxic levels of zinc and Lead found within the river system are cause for concern, and indicate a potential for negative biological impacts and possible biomagnification through the food web.

Length Determination using Interferometry

Kyle Elsasser

Tony Masiello, Chemistry & Biochemistry

Determining the distance that the light must travel through a gas (the path length) is often difficult to determine, especially in multipass gas cells. This is due to multiple reflections and curved mirror surfaces that are used to increase the path length in these devices. The goal of this research is to explore a method that can be used to determine the optical path length of a multipass gas cell utilizing interferometry and the known index of refraction of a gas. Path length determination is accomplished by analyzing interference fringe patterns that result from changing the pressure in a gas cell that is located down one arm of an interferometer. The changing pressure results in interference fringes that can be counted and related to the change in pressure to obtain the path length of the cell. This method of length determination yields lower uncertainties in the measurement of the path length compared to physical measurement, leading to greater certainty in gas phase chemical concentrations when using a Beer's Law.

Zombie and Disaster Preparedness

Kalvin Erbacher

Theresa Martin, Psychology

In 2011 the Center for Disease Control released a joke emergency plan for a zombie apocalypse. The CDC was surprised when it received such positive recognition. Since then they've kept it and added new material to the zombie apocalypse plan as a fictional scenario that can help people prepare for real disasters. In this study, we investigated the effectiveness of the novella released by the CDC, "101 Preparedness: Zombie Apocalypse," compared to the CDC's normal disaster information. This study randomly assigned participants into two groups. The first group read the novella while the second group read the traditional CDC disaster information. Participants were then asked to recall what items should be contained in an emergency disaster kit as suggested by the CDC. Finally, participants were asked a series of questions about the likelihood and threat of several kinds of disasters (including a zombie apocalypse). Our hypothesis retains that participants in the novella group will yield significantly higher recall scores than participants in the traditional information group.

Iran Nuclear Proliferation: Preventable or Political?

Brooke Erickson

Majid Sharifi, Government

The present issue of Iran nuclear proliferation is one that has plagued US foreign policymakers in the 21st Century. From the beginning of Iranian nuclear development, the United States has had mixed responses. Although the United States used to provide physical and verbal support for a nuclear Iran, the political climate in the past 40 years has changed the US tone. There are those who believe that Iranian nuclearization is a threat that must be dealt with, while there are others that say Iran nuclearization is a myth that has only been constructed by Western ideologies. This essay will examine both of these schools of thought. The essay will then conclude that Iran nuclear proliferation is one that is heavily politicized and will not be resolved without an overhaul and historical analysis of US-Iranian relations.

Landslide at Steamboat Rock

Lucas Evart

Chad Pritchard, Geology

An approximately 24,000 square meters section at the north tip of Steamboat Rock slid about 130 meters downslope. This large landslide likely occurred sometime during, or following the catastrophic draining of glacial Lake Columbia/ Missoula floods. Samples taken from the slump block were analyzed using portable x-ray fluorescence. Geochemical results were correlated to the stratigraphy along the basaltic cliff to help estimate the offset and to confirm that the block is a landslide deposit. Geochemical composition of the basalt was estimated using a new calibration developed between Bruker and Eastern Washington University, based on samples from eastern Washington that had previously been measured at the Peter Hooper GeoAnalytical Laboratory at WSU. The mass wasting event may have been due to preferential erosion of interbeds and/or possibly weathered granitic bedrock at the headward side of the Steamboat Rock during the Missoula Floods.

Assessment of Red Band Trout (*Oncorhynchus mykiss gairdnerii*) Predation by Small Mouth Bass (*Micropterus dolomieu*) in the Spokane River Watershed

Sierra Everman, Alli Gamble, & Paige Barbeau

Randall James, Institute of Science and Technology, North Central High School

Invasive species have played a key role in altering native ecosystems. Red Band Trout have historically faced population decline, due to many factors including habitat destruction, dams, water quality degradation, and uninformed sport fishing practices. The Spokane River Watershed has experienced many of the above impacts including recently the introduction of invasive predators such as Small Mouth Bass. Identifying prey species from gut samples can be difficult if not impossible due to the level of digestion and other materials that have been ingested. One strategy is to use DNA sequencing to identify gut material, but DNA analysis of gut material can also have challenges due to contamination and PCR inhibitors present in gut material that co-precipitate during DNA extraction. We are using DNA extraction and DNA sequencing of Small Mouth gut samples to measure consumption levels of Red Band Trout to assess the impact of this invasive species and to inform management for both fish. Once a baseline for predation frequency is established, management practices can be advised.

Identification of Novel Phenol Resistant Bacteria

Glory Farrell

Randall James, Institute of Science and Technology, North Central High School

Phenol has been found in at least 595 of the 1,678 most serious hazardous waste sites of the nation. Phenol is also a subcomponent of Creosote; a common wood preservative utilized in the past including the majority toxic chemicals such as phenol are distributed either as natural or artificial aromatic compounds of utility poles across our nation. Novel bacteria that are capable of detoxifying Phenol would be of considerable interest for potential cleanup of toxic sites including the soil around the ubiquitous creosote coated telephone pole. Utilizing isolation and plating techniques that minimize plating bias, bacteria were isolated and perturbed by a phenol gradient. DNA was extracted from microbes capable of growing in media containing phenol. Sanger sequencing of the 16s loci was used to barcode the bacteria and then the sequences were analyzed utilizing sequence alignment tools at the National Center for Biotechnology Information (NCBI).

21 Year Old Collegiate Long Jumper with Illiopsoas Tendinopathy

Olivia Frangos

Garth Babcock Physical Education, Health & Recreation

Due to similar presentations, diagnosis and treatment of injuries related to the hip region can be difficult. Both hip flexor strains and labrum tears can present with pain and tenderness over the joint, loss of range of motion, and can occur from traumatic and repetitive actions. This study will examine the process of diagnosis, treatment and rehabilitation of this injury. This case is a prime example of these challenges as the subject was originally treated for a hip flexor strain, but after negative results and further imaging and testing was found to have micro tears in the labrum from an irritated and compressing iliopsoas tendon. This study will investigate in detail what the methods of treatment were, why they were not affective, and why this injury was so complex to diagnose. It will also include information on the final procedure decided upon, why this final procedure was chosen, its effectiveness, and what the alternative possibilities for treatment were.

Bridging the Gap between Universities and Nonprofit Organizations through Collaborative GIS: A Case Study with Eastern Washington University (EWU) and the Spokane Edible Tree Project (SETP)

Julia M. Furlong, Jeffrey Cortlund Johnson, Michael Snyder

Stacey Warren, Geography

Collaborative GIS is an invaluable tool which enables researchers to address real world problems within their communities and beyond. Partnerships between universities and local non-profit organizations have the potential to address social issues. The Spokane Edible Tree Project (SETP) was established to address the thousands of pounds of food waste that is created annually from underutilized fruit and nut trees in and around Spokane, WA. Through a partnership between graduate students from Eastern Washington University (EWU) and SETP, the annual waste and potential yields can be mapped and quantified allowing the planning and implementation of harvest strategies. This collaborative process involves GIS specialists organizing data into viable working units for SETP volunteers to maximize

the potential identification and extraction of resources in an interactive web format. This will enable the majority of food waste from edible trees to be harvested and donated to local food banks, food bank distributors, and organizations who prepare and distribute food to those in need.

20 year old Division I Basketball Athlete with PFO and Associated Migraines

Hannah Gates

Garth Babcock & John Gerber, Physical Education, Health & Recreation

Migraine is a neurological disorder with unknown etiological origins (Domitrz, et al., 2007) and is present in about 13% of the U.S. population (Reisman & Fuller, 2009). For many years there has been an established correlation between this disorder and the presence of patent foramen ovale (PFO) (Dinia, et al., 2007), and recent research has found that PFO closure may eradicate or reduce the frequency of migraines in patients suffering from both PFO and migraine attacks. The purpose of this case study is to examine a Division I collegiate basketball player with the presence of PFO and migraines that has had no previous signs or symptoms associated with either PFO or migraines before 2 years ago. It will cover the onset of signs and symptoms, initial evaluation, surgical intervention for PFO closure, prognosis and the athlete's current condition. Providing a case study on a condition that has just begun to be researched will provide new insight or further establish the efficacy of using PFO closure as a means to stop severe migraine attacks in patients with the occurrence of PFO.

Assessment of Genetic Diversity in Mitochondrial Proteins of Canis Lupus (Grey Wolf)

Hannah Gibson & Forrest Mousseau

Randall S. James, Institute of Science and Technology, North Central High School

Our research focuses on the genetic diversity of *Canis lupus* (grey wolf) from the northwestern region of the United States, and how recent bottlenecks and population isolation have had an effect on overall genetic diversity. Human interaction and isolation have caused dispersed population of *Canis Lupus* to have genetic bottlenecks. To start out the wolves' genomic sequence was very diverse as it's the ancestor to all domestic dogs. So any diversity had to already be in wolves for it to be in domesticated dogs. Our hypothesis predicts that with the recent bottlenecks a decrease in specific mitochondrial diversity will be found within smaller populations but would not be detectable on a large scale due to the immense amounts of latent diversity in the population as a whole. Utilizing optimized DNA extraction of wolf hair and sequencing of multiple loci of the mitochondrial genome, analysis of diversity has been started. Our research will be expanded on by gaining more samples for an expanded conclusion, and the design of optimized primers for several more loci.

Jack Johnson

Andrew Gogl

Chadron Hazelbaker, Physical Education, Health & Recreation

In the history of sports there have been many huge influential people. Michael Jordan, Jackie Robinson, and Babe Ruth are just a few. One athlete who has had a tremendous influence in modern sports is Jack Johnson. He is most famously known for being the first African American world heavyweight boxing champion of the world. He faced many challenges non-sport related challenges such as racism and false accusations. His life and sports career continue to influence the culture of sports today.

Traumatic Brain Injury and Self-Awareness of Cognition

Alla Goleta, McNair Scholar

Jonathan Anderson, Psychology

Individuals who experience a traumatic brain injury (TBI) may experience diminished self-awareness of memory and other cognitive functions. Some individuals undergo rehabilitation after the incident, others do not. In this study, using an online survey, three groups were tested; individuals with TBI who underwent rehabilitation, individuals who didn't have rehabilitation, and neurologically normal controls. To determine whether rehabilitation has an effect on cognitive performance, using the verbal fluency task (FAS), participants were asked to predict how many words they would generate within a 60-second block starting with letters F, A, and S. There was no significance found between who generate more words nor any significance in prediction of performance. There was, however, a trend towards significance among the groups in awareness of verbal fluency in letters A and S but not F.

Empathy of Pain in Family Members of Chronic Pain Sufferers

Alla Goleta, Elizabeth Dotson, Michelle Budiman, & Yevgeniy Golubenko

Jonathan Anderson, Psychology

This study investigates empathy to pain in family members of individuals who experience chronic pain (CP) by measuring empathy to pain across four groups: primary caregivers to people with CP, non-primary caregivers who are family members who reside with an individual who has CP, non-primary caregivers who are family members but do not reside with someone with CP, and individuals who experiences CP. Empathy of pain (EPS) will be assessed using Giumarra and colleagues (2015) EPS model. I hypothesize that individuals who are primary caregivers for individuals with CP and non-primary caregivers who are family members and reside with an individual who has CP will report significantly lower levels of empathy to pain than individuals who are family members who are not primary caregivers and do not reside within the home and individuals who experience CP.

The Effects of Beliefs in God on Gratitude and Indebtedness

Jena Goude

Philip Watkins, Psychology

Feelings of gratitude being enhanced by the belief in God have been found within numerous studies. This study posed the questions whether the belief in God created more feelings of gratitude or indebtedness within three scenarios of benefit in participant's lives. Of the three scenarios the participants recalled and an other-caused benefit, a self-caused benefit, and a benefit that was caused by neither the self nor another human. After writing about each scenario the participants were asked to fill out a questionnaire to assess their feelings of each situation currently. This addressed the level of gratitude or indebtedness the participant may feel about the current situation. The results of feelings questionnaire were then put in comparison to the question of whether or not the subjects answered that they believed in God, did not believe in God, or did not know if they believed in god. In conclusion, the study found that that across all three scenarios, those of the participants who answered yes to a belief in God were more grateful and experienced less feelings of indebtedness.

Affecting Tutoring Practices to Improve Student Learning

Amanda Grogan

Jackie Coomes, Mathematics

Tutoring practices are the habitual actions tutors take in their efforts to help students. Tutoring practices are variant among individuals; and typically influenced by an intention to positively affect student learning. I conducted a learning community that for 10 weeks examined and reflected on contributions of tutoring practices to student learning. The purpose of this community was to create opportunities for teacher candidates and tutors to improve their tutoring practices through research, implementation, and reflection. This community deliberated how setting goals, students' motivation and mindsets, and assessing student thinking affected tutoring practices. The community's prominent goal was to connect research of effective influences on student learning to tutoring practices. Studying student learning topics lead naturally to discussions of affecting matters of inequity of opportunity to learn mathematics in our culture. The effectiveness of this community's efforts to improve student learning was assessed subjectively through the written reflections and field observations.

Rewriting the Narrative: The Rise and Effects of Marginalized Communities in Traditionally White Roles

Dulce Gutierrez Vasquez & Amanda Marie Mell

Norma Cardenas, Chicano Education

There is a disparity between the amount of people of color and white characters being depicted in films. An info graphic released on a study of race, sex, and casting in Hollywood film showed that nearly 46.5% of casting calls show preference for white actors as the default race of designation, yet the characters are only specified as white 22.5% of the time. The lack of representation for people of color in traditional narratives has damaged the identity and image of non-whites in our society. If media can be used as a tool to shape and perpetuate the prejudices of the dominant group, it can also be used to subvert them. The increase of roles of marginalized communities in classic white popular culture narratives is causing positive perception of self for marginalized people groups. Through the lens of Critical Race Theory we will analyze the positive effects of including marginalized roles in popular, traditionally white, narratives in entertainment such as *Star Wars*, *Orange is the New Black*, *Hamilton*, and *Mad Max*.

Geochemistry of Pre-Miocene Sedimentary Rocks of Eastern Washington Using Portable XRF

Elijah Hansen & Justin Schneider

Chad Pritchard, Geology

Pre-Miocene geology of eastern Washington is generally masked by expansive basalts making it difficult to correlate to regional rock types. However, some outcrops of the Pre-Miocene geology occur as steptoes, or are due to anthropogenic excavations. Samples from fine-grained pre-Miocene outcrops were analyzed using a Bruker Tracer III-SD portable X-ray Fluorescence (pXRF) to establish whether rock type provenance can be determined from bulk chemistry. Regionally, this may not work as sedimentary and metasedimentary rocks have a wide range of variable compositions. Locally, however, we may be able to correlate rock types from isolated outcrops. Quartzite classification is also based upon relative percentages of quartz and feldspar grains, which should be able to be identified using pXRF analyses.

The Origin of Xenoliths with Cumulus Textures Found Above the Subsurface Extension of the Stillwater Complex, Montana

Cassandra Hennings

Jennifer Thomson, Geology

The Stillwater Complex is a layered mafic intrusion in Montana. Gravity measurements suggest that the north-dipping complex extends at depth. Younger stocks are exposed to the north, over the area of the gravity anomaly. Samples of stocks with xenoliths showing cumulus textures reminiscent of Stillwater rocks were collected for study. The host rocks exhibit large crystals of plagioclase, amphibole \pm biotite in a finer groundmass of those minerals. Amphibole grains from the host and xenoliths are comparable in composition. Analyses of xenolith amphibole and plagioclase constrain temperature conditions at various pressures, consistent with amphibolite facies metamorphism. Few of the xenoliths retain the original mineralogy, but one sample contains clinopyroxene and another contains chromite; plagioclase and clinopyroxene compositions are somewhat comparable to Stillwater mineral compositions. Xenolith metamorphism

suggests that either they were metamorphosed prior to their inclusion in the melt or were metamorphosed or hydrothermally altered as a result of incorporation into the melt.

Geotechnical Analysis of the Impacts of Mazama Ash (5677 BC) on the California Bearing Ratio (CBR) of Soil from a Residential Construction Site in Cheney, WA

Cassandra Hennings & Justin Luppens

Richard Orndorff, Geology

"We analyzed volcanic ash from Mt. Mazama, found in Turnbull National Wildlife Refuge south of Cheney, and soil from the Harvest Bluff residential development, located between loess hills and glacial outburst flood paths. Ash deposits beneath the surface in the region may not be properly represented by surficial analysis. To understand the possible effects this can have on construction of roads and runways, we conducted CBR (ASTM D1883) tests on the Mazama ash, 50% ash-Harvest Bluff mix, and Harvest Bluff soil. The CBR test is used to evaluate the penetration resistance of compacted soil and determines the suitability of soil for road construction. Results show a minimal increase in soil suitability from pure Harvest Bluff soil sample (28%) to 50% ash mix (31%). This allows its use as an excellent subgrade, good base and good sub base. Similar results are expected in other soils in the region."

The Potential for Green Infrastructure in the University District of Spokane, WA.

Amy Hilland

Kerry Brooks, Urban & Regional Planning

The Winter quarter Community Planning Studio investigated the potential of green infrastructure (GI) in Spokane. GI is a form of stormwater management that employs natural features to maintain and protect water quality and quantity. GI provides a variety of benefits, including reducing stormwater run-off, pollutant removal, and waterbody recharge. The teams studied and cataloged various GI tools and applied them to two study areas in Spokane, WA. The team that authored this poster studied the University District in Spokane. This district is unique in that it contains major universities such as WSU, EWU, and Gonzaga, the Spokane River, as well as businesses and residences. This team developed and assessed scenarios focused applying GI tools to parking, sustainability, and green walkability. The team used GIS data regarding existing impervious surfaces and pre-and-post scenario runoff factors to estimate potential reductions in runoff. The team developed posters intended to educate viewers on the overall potential of GI as well as potential runoff reductions.

Integrating Health Departments through Workforce Development

Hayley Hodgins

Frank Houghton, Master of Public Health

Public Health agencies are becoming increasingly aware that knowledge is power. To be successful and effectively provide public health services competency is key. When beginning this research journey competency was described to me as The Benton Franklin Health Department (BFHD) sees the value in integration of knowledge between departments and investing in workforce development methods. One such method was to use the Core Competency Survey which gathers knowledge in the areas of: Analytics, Policy, Communication, Cultural Competency, Community Dimensions, Public Health Science, Financial and Leadership. This survey consisted of questions regarding employee confidence and capability to convey information from the eight core sections within public health. This survey was personally given to every employee and was a self administered assessment. This survey allowed the health facility to identify gaps in knowledge and services. Each department received an average score for each section. BFHD scored an overall 2.45 out of 4 for the entire organization.

Characterization of Glutamic Acid 22 ITPase Mutants

Kandise Holcomb & Caitlin April

Nicholas Burgis, Chemistry & Biochemistry

The inosine triphosphate pyrophosphohydrolase (ITPase) protein is an intracellular housekeeping enzyme responsible for removing nucleoside triphosphates (NTPs) containing abnormal nucleobases from nucleic acid precursor pools. Deletion of the ITPA gene is lethal in mice, suggesting maintenance of high quality NTP pools is required for life in mammals. For humans, variation of the ITPA gene can result in lethality soon after birth, demonstrating that this gene is essential for human life. Our studies are based upon recent findings that a mutant of ITPase, E22A, has greater activity than the wild type enzyme in-vitro, but decreased in-vivo stability. Using site-directed mutagenesis, we created two other mutants, E22D and E22Q, in an effort to produce an enzyme with high enzymatic activity and in-vivo stability similar to wild type. By coupling sensitivity and growth complementation data with enzyme kinetics experiments and molecular modeling we aim to better understand ITPA biochemistry in an effort to develop therapies related to ITPase drug metabolism.

Reactive and Proactive Aggression in Maltreated Children and the Role of the MAOA Gene

Kandise Holcomb & Caitlin April

William Williams, Psychology & Nicholas Burgis, Chemistry & Biochemistry

It has been established that low-enzyme producing variants of the monoamine oxidase A gene (MAOA-L) in severely abused children are associated with subsequent antisocial behavior during adolescents and emerging adulthood. We propose to extend the prior research by investigating whether the interaction of the MAOA gene with child abuse discriminates between proactive and reactive aggression. Our principal hypotheses is that early child abuse combined with the presence of MAOA-L variants will be associated with reactive aggression, but not with proactive aggression. Our procedure assesses childhood abuse using the Maltreatment Experiences Survey and aggressive tendencies using the Reactive-Proactive Questionnaire and the Peer Conflict Scale. Participants are genotyped to determine which MAOA

variant they carry using saliva samples. Our procedures have already identified three of the five variants in collected samples. The data will be analyzed using moderated linear regression (present N = 54, target N = 160).

Analysis of Ancient Bison to Identify Founding Population's Frequency of Maladaptive Mitochondrial Mutations.

Alexandra Horn & Kaarina Miller

Randall James, *Institute of Science and Technology, North Central High School*

Ancient Bison and modern bison are being assessed to compare the presence and frequency of mutations in the mitochondrial genome that may have amplified due to bottleneck effects. North American Bison have gone through multiple bottlenecks due to glaciation, market hunting, and sub-population restocking to establish new herds. Bison have exhibited low genetic diversity within their mitochondrial genome, in addition, a high frequency of maladaptive mutations have been identified in what is believed to be pure bison herds. The goal is to see if these, and other mutations, were present in ancient populations. Collected bone was drilled and the resulting bone powder was taken into an optimized DNA extraction protocol. From this point, the extracted DNA was taken into loci specific PCR followed by Sanger sequencing. Initial findings show a robust extraction protocol that produces clean DNA for downstream applications. No maladaptive mutations in ancient samples have been identified so far, but there are still more bones from multiple other locations to be evaluated.

Early Waterfowl Breeding Pair Survey of Wetlands on Turnbull National Refuge

Shelby Hunter, Jessica Colegrove, Katelynn Niehl, & Leonard Simpson

Margaret OConnell, Biology

Early waterfowl breeding surveys were conducted in 2011 and 2015 on Turnbull National Wildlife Refuge by EWU Ornithology Class. Early waterfowl breeding surveys are important because the target species, canvasback (*Aythya valisineria*), Canada goose (*Branta canadensis*), and mallards (*Anas platyrhynchos*), are often underestimated in later surveys. Early waterfowl presence on wetlands can offer information on condition of wetlands. We surveyed 65 to count all waterfowl species seen in pairs, single males, or single females. The habitat type, wetland condition, and weather were also recorded at each wetland. There was a trend for both relative species abundance and species diversity to be greater in 2015. With respect to the three target species, abundance was greater on larger, more flooded ponds. As climate change offsets the seasonal cycle of wetland habitats, continued monitoring of early breeding waterfowl is important.

Stress Levels and Animal Ownership

Ashley Jackson & Cierra Sande

Theresa Martin, Psychology

The proposed research is designed to address a major question regarding animals and a student's stress level. A review of literature on the subject yielded the concept that there was a lack of information on animals and their effect on their owners stress level. The focus of this study is on a student's stress level and if owning an animal can help reduce the stress. The participants of this study will be males and females from a university their ages range from 18 to 39. Participants were given an online survey about animal ownership and asked how they think animals affect their stress levels with regards to school. General frequencies showed that college students tend to think pets would be beneficial to help reduce stress. These frequencies were shown by both non-pet owners and pet owners.

Long Term Parent-Child Relationship Disruption in Post-Divorce Conflict

Ashley Jackson, Hena Amin, & Rayanna Tensley

Theresa Martin, Psychology

It has been shown that 50% of children will witness a break up of their parents' marriage (Irvin, 2016). Conflict in marriage can be just as detrimental as post-divorce conflict. Post-divorce conflict can affect the parent child relationship (Cox, Harter & Paley 2001). Ongoing post-divorce parental conflict can affect the loyalty of the children towards their parents based on the different types of conflicts witnessed (Buchanan & Heiges, 2001). It is hypothesized that hearing negative comments from one parent about the other will be associated with lower contact and poor relationships later in life with that of the target parent. To assess this hypothesis, participants will be from family households where birth parents were either divorced or not divorced from each other at some point. Respondents will indicate the amount and nature of marital and post-divorce conflict, their age at the time of parental divorce, and their current contact levels and perceptions of both the target parent and the parent making the be negative comments.

Synthesis of Novel Cu²⁺ Complexes with Substituted Pyrimidines

Daniella Jasen

Jamie Manson, Chemistry & Biochemistry

The novel chain polymer, $[\text{Cu}(\text{pym})(\text{H}_2\text{O})_4]\text{SiF}_6$ (pym = pyrimidine), was recently synthesized in our group. Its structure consists of unique helices whereby Cu(II) ions are bridged by pym ligands and its magnetic properties are consistent with very strong magnetic interactions along these chains. We are currently investigating our ability to swap the pym ligand with some of its substituted derivatives to try to produce similar crystal structures. Different ratios of Cu salt to pyrimidines were used to explore and isolate specific crystals grown in solution. Crystals were then analyzed using X-ray Powder Diffraction Synchrotron with the most interesting structures obtained so far being from 2-Hydroxypyrimidine hydrochloride. The 1:2 stoichiometry resulted in a cis structure of $\text{CuCl}_2(\text{OH-pym})_2$ whereas the 1:3 stoichiometry of Cu(II):2-OHpym affords the trans-isomer.

Enigmatic Amphibolite Located North of the Stillwater Complex, Montana

M. Christopher Jenkins

Jennifer Thomson, Geology

"The Stillwater Complex is an Archean layered mafic intrusion in Montana. Layering of the complex dips to the north and appears to dip into the Dry Fork Thrust. A gravity anomaly north of the fault may be the complex under cover. The only outcrop of Precambrian rocks north of the fault is an amphibolite. The amphibolite may represent: (1) country rocks below the complex, (2) metamorphosed roof rocks above the complex, or (3) metamorphosed cumulates of the complex. Our samples are mafic meta-igneous rocks of lower amphibolite to greenschist-facies with relict igneous textures to mylonitic fabrics collected 2 km north of the complex. Electron microprobe analyses of coexisting amphibole and plagioclase were used to constrain the temperature conditions at various pressures for three samples (P at 3, 5, and 6 kb; T = 417-441°C). Bulk rock geochemistry was used to test the origin hypotheses. The samples plot in the iron-rich basalt field using the Jensen classification and are dissimilar from the greywacke and iron formation found below the complex. Primitive mantle spider diagrams"

Maladaptive mtDNA Analysis of Canis Lupus

Alexander Kinnear & Taylor Huttyler

Randall James, Institute of Science and Technology, North Central High School

The Grey Wolves used to hunt from the eastern Appalachians to the western Rockies as the primary predator of the North American continent. As the human population expanded west the wolves were hunted to remove them from the area because they were seen as a threat; the gray wolf was nearly hunted to extinction because of the expansion of man. We are looking into the possible results that this population bottleneck may have had on the species by sequencing DNA from old and new wolves to check for mutations within the mitochondria on sites CYT B, COI, and ATP 6. We are using a hair DNA extraction, PCR, and sequencing to test for the presence of point mutations within these regions which may have an effect on the electron transport train of the respiratory chain, and the mitochondrial oxidative phosphorylation, and the proton channel. We expect there to be mutations in at least one of the three regions as a result of genetic drift caused by the population bottleneck.

The Gut Microbiome Affects the Progression Of Disease in a Murine Model of Secondary Progressive MS

Trevor Kirby & Abby Keever

Javier Ochoa-Reparaz, Biology

Multiple Sclerosis (MS) is an autoimmune disorder that affects the central nervous system. In MS, autoimmune cells destroy the neuronal myelin sheath and cause paralysis. The gut microbial population (microbiota) is recognized in contributing to regulation of the host's immune system and regulates the severity of animal models of autoimmune diseases, including MS. We hypothesized that the development and progression of the disease would affect the composition of the gut microbiota. We compared the microbial relative abundances at various stages of the disease that characterize the secondary progressive type of MS in genetically susceptible mice by microbial 16S rRNA analysis. Further, we studied the effects of microbiota alterations by treating mice with antibiotics. The disease affected the composition of the microbiota on a stage-dependent fashion. Early treatment with antibiotics significantly reduced the severity and progression of the disease. Our results demonstrate a bidirectional association between disease severity and the composition of the gut microbiota.

Comparison of Wrist Worn Activity Trackers, Cell Phones, and Pedometers on Step Counts in Adults

Kara Kracher, Nicole Holliday

Nate Lawton & Annika Vahk, Physical Education, Health & Recreation

The purpose of this study was to compare the effect of cell phone placement on activity tracker accuracy between a hip worn pedometer (PD), wrist activity tracker (AT), and cell phone (CP). 37 healthy adults who own a smart phone and AT participated in this study. A PD was placed in the left hip pocket and the AT was placed on the non-dominant wrist. Participants walked on a treadmill at a self-selected casual pace for 5 min to establish their speed and test activity tracking devices. Subjects completed two 5 min conditions, CP in the front right pocket (CPP) and CP in hand (CPH). Data was analyzed using a 2x3 repeated measures ANOVA and Pearson Correlation Coefficients were calculated. No significant differences ($\alpha=.05$) were found between devices within or between CPP and CPH conditions. A strong positive correlation was found for PD step counts between CPP and CPH conditions ($r=.979$) and AT step counts between CPP and CPH conditions ($r=.724$), but a weak positive correlation was found for CP ($r=.048$) between conditions which could be due to holding the phone in the CPH condition.

Flocking, Obstacles, and Agent Based Modeling

Anna Kravtsova, McNair Scholar

Krisztian Magori, Biology & Frank Lynch, Mathematics

Flocking is a grouping behavior attributed to animals when they move in cohesion. Flocking is characterized by a group composed of self-determining individuals without explicit leadership or guidance, exhibiting what appears to be a directed and controlled collective motion. When flocks are simulated by a program, simple rules like collision avoidance, alignment, and cohesion can create realistic models of grouping behavior. We are investigating the effect obstacles have on flocking behavior as simulated through an agent based model developed specifically for this investigation. The

program simulates flocking using agents that have various levels of adherence to rules that the entire flock follows. We found that agents with low adherence to flocking rules create a more diffuse pattern. Obstacles are implemented into the program in order to test their effect on flocking behavior. Agents with high affinities to each other create tight group formations which freely cross obstacles while low affinities result in the agents dispersing and causing difficulty in obstacle traversal.

Genetic Diversity and Durable Maladaptive Mitochondrial Mutation Analysis in Washington State Mule Deer (*Odocoileus hemionus*)

Rebecca Landron, Claire Ecklund, & Kyra Fromm

Randall James, Institute of Science and Technology, North Central High School

Mule deer range from the west coast of America to the Great Plains. As a result of multiple factors, Mule deer have the potential for lost diversity and the accumulation of durable single nucleotide polymorphisms (SNPs) that may cause metabolic disorders. Here we show the extent of which population bottlenecks have affected the diversity of Mule deer in Washington State and analyze the effect of SNPs on respiratory protein formation and function. Using standard PCR and sequencing methods 43 deer from 13 herds across Washington State were sequenced for the D Loop region. The results were compared to 43 published sequences from Montana herds. 33 haplotypes were found in the published Montanan sequences, while only nine were found in the Washington State data, and no haplotypes were found to be shared between the two regions. Thirty-eight deer were then sequenced for the protein coding cytochrome b region and were compared to sequences across the Northwest. SNPs causing changes in protein conformation were found in a cytochrome b fragment in one deer from the Washington population.

Petrology of a Section of Drill Core at the Contact Between Stillwater Cumulates and Banded Iron Formation, Montana

Eric Larson

Jennifer Thomson, Geology

The Archean Stillwater Complex is a large layered mafic intrusion located in south-central Montana and is exposed for nearly 50 km along the north flank of the Beartooth Mountain Range. A section of drill core (~ 1m long) thought to represent a transition zone between pyroxene cumulates of the Stillwater Complex and adjacent banded iron formation was selected for detailed study. The length of the core was characterized for geochemical variations using a hand-held Bruker XRF (X-ray fluorescence) spectrometer and six thin sections of somewhat variable lithology were selected and are representative of fine-to-medium grained Stillwater pyroxene cumulate (A), a very fine-grained igneous rock oriented 30° relative to the core axis (B), coarser-grained pyroxene cumulate (C and D), pyroxenite with magnetite stringers (E), and very fine-grained iron formation (F). The intervening lithologies may represent either (1) a Stillwater chill zone (B) and different types of iron formation and related rocks or (2) a metasomatic reaction zone with B representative of modified Stillwater rock and C-D, modified iron formation. Samples A and E are characterized by albitized plagioclase, orthopyroxene with fine exsolution lamellae, relict clinopyroxene, quartz, abundant clay minerals and two varieties of amphibole (Fe-Mg-Mn and Ca amphibole subgroups). Fine-grained sample B was much less altered and characterized by very calcic plagioclase (An_{>90}), orthopyroxene, calcic amphibole, and clay minerals. Samples C and F lack both

plagioclase and pyroxene, and have amphiboles (primarily Fe-Mg-Mn with lesser Ca amphibole subgroups) and unidentified clay minerals.

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

Allyson Lesesne

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 species. For this experiment, the CV was used to determine the acetaminophen, formal chemical name N-4-acetamidophenol (APAP), concentration in four brand name samples of children's liquid pain relief medicines (i.e., Equate, Up&Up, Well, and Tylenol) 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 a five-point external calibration curve. From the equation of the linear least Squares (LLS) regression line generated with a correlation coefficient (R^2) values of ≥ 0.9987 the concentration of APAP in the diluted brand samples and QC standards could be determined.

Analysis of Soil Organic Carbon Content and Soil Respiration Rates from Wetlands in Eastern Washington

Aunalee Lindsey & Marissa Medina

Justin Bastow, Biology

Wetlands are a key component in the global carbon cycle and store approximately 20%-25% of global soil organic carbon. We questioned what type of wetlands hold more SOC and which wetlands have greater soil respiration rates. We sampled permanent and ephemeral soils from Eastern Washington. Over a six week period we measured both SOC and soil respiration at four differing moisture levels: 100% (waterlogged), and 75%, 50% and 25% of the waterlogged state. Our results measuring respiration rates indicated a significant interaction between moisture level and wetland type. When measuring SOC there wasn't a significant correlation between moisture level and wetland type. Amongst both wetland type and moisture levels however, there were individual significant interactions. We concluded that the type of wetland has the most relevance in terms of both SOC content and soil respiration rate. Ephemeral wetlands were the most consistent. As climate changes permanent wetlands will possibly convert to ephemeral wetlands and conservation efforts should be prioritized with this in mind.

Using Morphological Traits to Distinguish Two Closely Related Local Tick Species

Bogdan Lisovenko

Krisztian Magori, Biology

Besides being annoying, ticks transmit the greatest diversity of pathogens, such as Lyme disease & Rocky Mountain Spotted Fever. Two species of ticks, the Rocky Mountain Wood Tick (*D. andersoni*) & the American Dog tick (*D.*

variabilis) are commonly found in Eastern Washington. These two closely related, very similar species can only be distinguished by examining a special structure on their abdomen, called the spiracular plate, which is somewhat subjective. In order to develop a more reliable method for species identification, I took pictures of 42 locally collected ticks under the microscope, both of the entire tick as well as the spiracular plate on both sides. Using ImageJ, I extracted several morphological measurements based on these pictures for 6 ticks, including the area of the spiracular plate. Four out of these 6 ticks were identified as *D. andersoni*, & two as *D. variabilis*. We found significant differences in some of the morphological measurement, including the area of the spiracular plate, between ticks identified as *D. andersoni* and *D. variabilis*.

Geotechnical Analysis of a Martian Soil Simulant Jsc Mars-1

Justin Luppens

Richard Orndorff, Geology

We tested a Martian soil simulant (MSS) for geotechnical properties. Both NASA and Mars One plan manned missions to Mars in coming decades. This necessitates an understanding of soil characteristics for construction as well as stability of transported habitats. MSS is classified as a non-plastic silt by the Unified Soil Classification System. The California Bearing Ratio (ASTM D1883-14) test reveals the suitability of soil for use in roads, runways, and landing pads. The CBR test gave a result of 5.6% at optimal water content and 8.4% when dry. Unconfined compressive strength (ASTM D2166-85) testing allows identification of yield strength and ultimate strength of soil for supporting a structural load. The ultimate strength of MSS near optimal water content is 3000 psf and 2300 psf when dry. Understanding the impacts of reduced water and gravity on soil behavior is an important part of Mars mission planning.

Mutagenesis of a *Bordetella* Virulence Protein

Kseniya Maroz, Grace Kim, Manyee Chow, Angela Newman, & Megan Hall

Suzanne Bassett, Life Science, Spokane Community College

Pertussis is a highly contagious human respiratory illness caused by the bacterial pathogen *Bordetella pertussis*. In animals, *Bordetella bronchiseptica* causes kennel cough, a similar respiratory illness. *B. bronchiseptica* is routinely used as a model system in pertussis research because it is easier to culture and does not typically cause illness in humans. *Bordetella* Type III Secretion System Effector A (BteA) is a virulence protein produced by members of the genus *Bordetella*. The BteA protein rapidly kills a wide range of mammalian cells, and appears to be important in the pathogenesis, yet the mechanism of cytotoxicity is presently unknown. The objective of this project is to perform mutagenesis to determine which regions of the bteA gene are responsible for cell killing. *Bordetella bronchiseptica* isolates expressing mutagenized bteA will be screened for the non-cytotoxic phenotype. An enhanced understanding of BteA may lead to more effective therapies and vaccines.

Influence of Mazama Ash on the Unconfined Compressive Strength of a Soil From a Residential Development in Cheney, WA.

Drake Martin, Brandon Kautzman, & Justin Schneider

Richard Orndorff, Geology

We tested soil from the Harvest Bluff (HB) residential development in Cheney, WA. We also tested Mt. Mazama ash (5677 BC eruption), which is locally abundant in the Spokane-Cheney area, to assess the impact of volcanic ash on soil properties. We determined unconfined compressive strength (ASTM D2166-85) of HB soil, Mazama Ash, and a combination of 50% of each sample by weight. Samples were compacted and tested at varying water contents to determine strength and the water content at which each sample crossed the brittle-ductile boundary. Pure HB soil reached maximum unconfined compressive strength (5486 psf) at 15% water content, pure Mazama ash (5347 psf) at 35% water content, and the mixed sample (4692 psf) at 20% water content. At lower water contents, the addition of ash weakened the HB soil in compression, increased the strength at higher water contents, and increased the water content of the brittle-ductile boundary. We hypothesize that Mazama ash will have similar impacts on the compressive strength of other soils undergoing development.

The Effects of Environmental Variables on Tick Numbers at Turnbull National Wildlife Refuge

Na Matson

Krisztian Magori, Biology

"The study of tick distribution, questing behavior, and habitat is important because ticks serve as vectors for numerous diseases. The object of this study was to investigate the effect of temperature, humidity, and vegetation height and type on tick abundance. Ticks were collected along both sides of a measured transect in Turnbull National Wildlife Refuge. Temperature, humidity, and the number of ticks were recorded every 10 m of the 100 m transect, on each side. Vegetation was sampled and the height was measured in three random areas of each 10 m section of each transect. Ticks were examined to identify sex, species, and life stage using a dissecting scope. Adult male and females were found of *Dermacentor variabilis* and *D. andersoni*. Most ticks were found at site 3 and more ticks were found at higher temperatures. Temperature and relative humidity seem to have the most impact, but are not enough to fully explain site to site differences. Plant height had no effect. Further research host availability is recommended. Areas with brush alongside trails should be avoided."

Comparative Analysis of *E. Coli* Abundance of the Murine Gut Microbiome Under Increased Dietary Cellulose

Will Mead, Megan Doherty, Timoteo Silvas, & David Padgham

Javier Ochoa-Reparaz, Biology

Our gut provides a suitable niche for multiple phyla of commensal microbes whose relative abundances are known to change rapidly with diet. The Western diet is characterized by low intake of dietary crude fiber, a known fermentation substrate for human gut fauna. Increased abundance of proteobacteria, including the model species *Escherichia coli*, has been suggested as an indicator of gut dysbiosis. Dysbiosis is currently being studied in connection with numerous

autoimmune diseases and other disease components. We then queried the change of *E. coli* presence in response to high-fiber diet using a murine model and simple culture techniques. Observing a significant change, we returned the treatment group to a standard diet and closely monitored the restoration of normal *E. coli* concentrations. Data supported our hypothesis and clearly showed the rapid rate of change in response to diet.

Spokane Retail Survey

Ghazal Meratnia, Lauren Luther, & Kurtis Godfrey

Frank Houghton & Olugbemiga Ekundayo, Master of Public Health

Tobacco is a leading cause of morbidity and mortality responsible for millions of deaths every year. According to the World Health Organization tobacco kills an estimated 6 million people every year. In 2011 in Washington State, 17.5% adults smoked (7th in the U.S.). Based on our survey results, the average price that Washington smokers reported paying for their last pack of cigarettes was \$6.44 in 2009–2010; the range among states was \$7.98 to \$4.04. 2013 productivity loss in the U.S. exceeded \$150 billion Tobacco is an important public health problem worldwide. Using the Standardized Tobacco Assessment for Retail Settings (STARS) survey, designed for practitioners to inform state and local tobacco control policies at the point of sale, the study evaluated the distribution of health promotion and risk issues in tobacco marketing among South Hill, Spokane tobacco outlets. National and state smoking trends were compared and contrasted current data and the testing area. Results were varying with a near plurality of stores offering tobacco in through cigarette fashion.

Analysis of *Pisaster Ochraceus* for Maladaptive mtDNA Mutations and Links Between Sea Star Wasting Disease and Increased Ocean Temperatures

Matthew Mickey, Sarah Lunnen, & Gabrielle Clark

Randall S. James, Institute of Science and Technology, North Central High School

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 (SSaD), 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 Pacific Coast. Using DNA extraction, PCR and loci specific sequencing, 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. By comparing Sea Star samples with maladaptive SNPs to those known to have SSWD, this study hopes to find a correlation between the maladaptive SNP and the susceptibility to the disease.

La APPO: "Social Activism in Oaxaca"

Virginia Morales, *McNair Scholar*

Elisa Facio, Chicano Education

On May 22, 2006, teachers from Section 22 of the Mexican National Education Workers' Union (SNTE) occupied the central plaza of Oaxaca city, the capital of the southern Mexican state of Oaxaca. Municipal police, local firefighters, and troops from the Federal Preventative Police (PFP), violently evicted the demonstrators. In response, the Popular Assembly of the Peoples of Oaxaca (APPO) emerged in June, calling for a wide range of political, social, and economic changes. APPO's primary demand was the removal of Governor Ulises Ruiz Ortiz. Their goal was to hold him accountable for the human rights violations committed during his term, and also to address the socio-economic, healthcare, and education problems facing Oaxaca. The aim of this study is to examine the extent to which the movement succeeded as a voice for marginalized people of Oaxaca. Using newspaper articles and oral testimonies collected by the author, this project examines APPO's encounters with the government from 2006 to 2010, when Ulises left office.

The Impact of a Women's Labor Force Participation, Education, Income, and Race on Family Planning

Hope Morrow

Kelley Cullen, Economics

To determine if family planning is affected by women's labor force participation, education, and income; a linear econometric model was created. Through econometric modeling, OLS regressions, and intense data analysis many interesting conclusions are drawn through this research. This model provided discussion on family planning looking at data from 2000-2015 on the age at which a woman chooses to have her first child. In America, during this time period, sex education was widespread and contraception became readily available at a low cost. It was found that the most severe differences in childbearing age were a result of racial/cultural group specifications. This research is insightful, and could be expanded with more observations in America and utilizing foreign data for an international comparison.

Assessment of Bottlenecked Montana Big Hole River Watershed Arctic Grayling (*Thymallus Arcticus*) for Diversity and Potentially Increased Frequency of Metabolic Disorders

Nadina Mrkaljevic & Zoe Zywiak

Randall James, Institute of Science and Technology, North Central High School

The melting of glaciers deposited populations of Arctic Grayling (*Thymallus Arcticus*) in refugia in Montana and Michigan. In 1936, the Michigan population went extinct. Over time the Montana population has decreased to only 5% of its original range. The speed with which the population dramatically decreased resulted in a bottleneck. When a bottleneck occurs, the genetic traits present in the smaller population are bred out into the resulting populace, possibly making traits that were previously rare now prominent in the new population. Based on the population fluctuation experienced by the Montana Arctic grayling, low levels of genetic diversity including deleterious mutations are expected. Focusing on a group residing in the Montana Big Hole River, samples are being genotyped at A"

Peace Education in Japan & The U.S.: Where Do We Go From Here?

Aiko Nagabuchi

LaVona Reeves, English

This critical ethnography examines Japan's curriculum and proposes innovative ways of educating for global peace, introducing Okinawa Prefectural Peace Museum and other sites in Japan and the United States where students may see other perspectives of war and peace. Travel and reflection provide opportunities for deeper awareness while reading about the lives of heroes such as Eleanor Roosevelt, Louis Zamperini, Maya Lin (the architect who designed the Vietnam Memorial Wall in Washington, D.C.), Anne Frank, Chiune Sugihara--a Japanese diplomat who saved the lives of hundreds of Jews during WWII. Selfo (2015) identified the benefits of peace education beginning in elementary school in the United States, and the author argues that these also apply to Japanese children and young adults. Currently, we see initiatives such as the one reported in 2016 in which "thousands more girls [are] to receive access to education via Peace Corps initiative"--and such initiatives are major parts of peace education as well.

The Optimization of Extracting Mitochondrial DNA from Dated Eastern Gray Whale (*Eschrichtius robustus*) Baleen and Bone Samples

Christina Negretti, Kristen Wanke, & Taylor Charbonneau

Randall S. James, Institute of Science and Technology, North Central High School

In the 1900s, the Eastern Gray Whale population was at an all-time low, with only about 1,500 individuals, compared to the 30,000 in the 1830s. Due to the dramatic decline we hypothesize that there will be less genetic diversity within the current whale population. Extracting sequence quality DNA from hard tissues such as bone, hair and baleen can be problematic, with low yield and quality, and co-precipitation of PCR inhibitors being the major issues. When trying to extract DNA from baleen, we discovered that the baleen is very coarse, because it is made of keratin, we struggled to get it to lyse enough to get DNA from it. By analyzing and optimizing several protocols, we have found one that was able to successfully extract DNA from the baleen. From the DNA extracted, we were able to sequence multiple loci from the whale's mitochondrial genome. We are currently working towards getting sequence from the whole mitochondrial genome, as well as applying the optimized extraction protocol with other baleen, bone and blubber samples.

Comparative Geotechnical Analysis of Mount Mazama Ash and Bentonite Clay

Duc Nguyen & Brea Lund

Richard Orndorff, Geology

We tested Mount Mazama ash sampled locally at Hangman Valley and bentonite clay from Wyoming in a comparative analysis. The bentonite clay originated from volcanic ash deposits that have undergone hydrolysis. We determined the moisture density relationship (ASTM D698 standard) and unconfined compressive strength (ASTM D2166-85). We determined the optimal water content of the clay soil was 30% and the ash was 43%. The maximum unit dry weight was 75.3 pcf for the clay and 70.1 pcf for the ash. The range of allowable water content to achieve 95% above the maximum unit dry weight was 16.5% to 50% for the clay and 20% to 53% for the ash. The ultimate strength was 5201 psf for the clay and 2963 psf for the ash sample. The yield strength was 2682 psf for the clay sample and 798 psf for the ash sample. We hypothesized that these differences between the ash and the clay soils are due to variations in grain size and shape. While the ash grains are irregular and highly angular, the clay grains are smaller and platy in shape.

Study Habits and Test Anxiety: Their Role in GPA

Kelly Nichols, Nicholas Coker, & Patrick Loyola

Theresa Martin, Psychology

The purpose of the present study was to test the potential predictive effect of test anxiety and study habits on GPA. A current total of 72 Eastern Washington University students completed an online survey (though it currently remains open to responses), which was comprised of the Cognitive Test Anxiety Scale (Cassady & Johnson, 2002), study habits inventory (Hartwig & Dunlosky, 2011), and some locally developed student behavior and demographic items. The expected results would support the findings of Hartwig & Dunlosky (2011) and those of Cullern & Holahan, (1980). The former found through the same survey the present study incorporated that certain study habits have significant predictive value of GPA, while the latter found that those with high test anxiety had lower GPA and less effective study strategies compared to those with low test anxiety.

Investigating Critical insights: How Mothers of Mexican Descent Expose Gaps in Dominant Approaches of Promoting Healthier

Jessica Ochoa, McNair Scholar

Elisa Facio, Chicano Education

This research project examined Mexican and Mexican-American mothers' perceptions and attitudes about childhood obesity and how institutional recommendations, poverty, and migrant status impact these perceptions and attitudes. The purpose of this research was to identify possible factors that contribute to the increasing rate of childhood obesity in the Latina/o population of Yakima, Washington. Information from published sources were supplemented through interviews conducted with Mexican and Mexican-American mothers to identify the social determinants of childhood obesity. I partnered with community based representatives in particular with community members who assisted in recruiting interviewees using a community based participatory research (CBPR) approach, interviewing a total of 10 Mexican and Mexican-American mothers in Yakima, WA. Data was transcribed and analyzed using critical medical anthropological and Chicana feminist approaches. The potential benefit of this research project includes taking action steps in the community as an intervention for childhood obesity.

Neural Field Models — A Study of Learning and Memory

Christopher O'Connell

Andrew Oster, Mathematics

Studying neural field models coupled with learning and memory uses a combination of analytical and numerical methods. We hypothesize that principles from thermodynamics carry over to models of learning, memory, and knowledge. We look at working memory and knowledge gain and retention. Working memory decays rapidly and is replaced by new information, unless renewed. This type of memory has a limited capacity that relates to attention. This system carries no lasting memories and is considered reversible. Long-term memories behave differently and are distinguished as knowledge. A system that carries its past is thermodynamically irreversible. Long-term growth and decay of knowledge are consequences of imbalances between consumption and degeneracy of attention. The neural corollary of attention may be thought of as a resource pool required for learning and renewed by rest. We model the gain and loss of knowledge as a

dynamic system where the creation or upkeep of a memory depletes attention. This basis gives insight into the power laws underlying the acquisition and decay of knowledge.

The Determination of Cobalt-(II) and Chromium-(III) Mixture by Ultraviolet-Visible Absorption Spectroscopy (UV-Vis)

Koryne Plaskett

Wes Steiner, Chemistry & Biochemistry

Ultraviolet-visible absorption spectroscopy is often used because many molecules absorb ultraviolet or visible light. In this experiment UV-Vis absorption spectroscopy was used to determine the concentrations of Co (II) and Cr (III) in two quality control (QC) standard mixtures. The absorption of light by these two components as a mixture at any given wavelength are said to be additive in that just the sum of the absorbance of the individual components. The use of two modern LabQuest UV-Vis instrumental setups in this experiment employed the Vernier Spectrometer and a Vernier Spectrometer Plus, in comparison to an older Pharmaspec UV-1700 to determine the concentration of Co (II) and Cr (III) in the two QC standard mixtures. This was accomplished in the first step by obtaining an absorption spectra for the two individual solutions [Co (II) & Cr (III)] from 375nm to 625nm and generating a plot of absorbance versus wavelength to find the wavelength(s) where the absorption of one species is strong and the other is weak and vice versa.

Comparative Examination of Lake Spokane Groundwater for Nutrient Discharge by Development Influence

Wyatt Plastino

Suzanne Schwab, Biology

To support the implementation of the total maximum daily load regulation for the Spokane River and Lake Spokane area in Eastern Washington, the influence of residential development along the north shore of the Lake Spokane reservoir in the Suncrest area was examined as a possible nonpoint source of nutrient contamination to shoreline groundwater and as a possible influence on algae growth in the Spokane River and Lake Spokane. Surface water and groundwater samples from hand-driven piezometers were sampled at three site categories differing in proximity to residential developments: nearshore, terrace and absent. Samples were taken monthly from March - August 2015. Groundwater samples were then analyzed for chloride, ammonia, nitrite/nitrate and orthophosphate through the Manchester Laboratory. Surface Water samples and a subset of groundwater samples were analyzed for ammonia, nitrite/nitrate and phosphates through EWU. Algae growth responses to groundwater taken from the three different site categories were compared using *Anabaena* sp. as a bioassay indicator.

Analysis of invasive *Pterois volitans* and *Pterois miles* genetic diversity

Jacob Powell

Randall James, Institute of science and Technology, North Central High School

Lionfish, (*Pterois volitans* and *Pterois miles*), have demonstrated an extreme ability to adapt to both their native and non-native environments. Introduced into Caribbean waters sometime around 1985, they have spread dynamically causing a growing ecological disaster. Lionfish have voracious appetites and experience limited predation. The Caribbean population is thought to have been founded with fewer than thirty individuals leading us to question if it has lost genetic diversity due to this extreme bottleneck. Using DNA extraction, PCR and Sanger Sequencing multiple loci were analyzed to expose diversity within the introduced population. Sequence will be compared to native Lionfish populations as well as compared to diversity in other introduced marine fishes.

Is the Wage Difference Between Spokane County and King County Offset by Cost-of-Living Differences?

Donya Quarnstrom, McNair Scholar

Kelley Cullen, Economics

In Washington State, King and Spokane County are the two highest population counties with the greatest absolute employment levels. In 2014, the median wage in King County (Seattle) was \$70,589 while in Spokane County the median wage was \$42,650. This paper looks to discover some of the causes of the large wage difference, and if the higher wage in King County is offset by higher costs to live there. Theories and data are collected from published peer reviewed articles, Bureau of Labor Statists, City Data, United States Census Bureau, and Massachusetts Institute of Technology's (MIT) Living Wage Calculation of minimum cost-of-living standards. The results suggest that at lower wages, the wage differential does not offset the high cost-of-living in King County. However, at higher wage levels, the wages from transferable job skills between Spokane and King County does offset King County's higher cost-of-living. In particular, differences in employment in certain industries and the overall population level also explain a portion of the wage differential.

Long-term Effects of Childhood Trauma on Shopping Behavior

Raquel Ramos, McNair Scholar

Deanna Trella, Children's Studies

A recent empirical study points to a rise in compulsive buying, solidifying the need for more research to address developmental factors, type of trauma, and treatment of trauma-specific OCD like compulsive buying. The purpose is to expand the understanding of the physical, psychological, and emotional distress associated with childhood trauma and how it's related to development of compulsive buying behavior. The sample included 6 individuals who self-identify with any obsessive-compulsive and/or addictive behaviors. During the interviews, participants completed a series of questionnaires to measure aspects of post-traumatic stress, self-worth, and the severity of demonstrated compulsive-buying behaviors to determine which type(s) of trauma is most closely associated with the development of compulsive buying behavior. Initial analysis indicates trauma resulting in low self-esteem, anxiety, depression, and hyperarousal might influence compulsive buying behaviors.

Case Study of a 22-Year-Old Female Collegiate Track Athlete with Compartment Syndrome of the Lower Leg

Carli Robins, Joe Cordes, Keira Lathrop, & Jayme Schaefer

Parry Gerber & Garth Babcock, Physical Education, Health & Recreation

Exertion related compartment syndrome is typically known as swelling of the lower leg that causes numbness, tingling and total loss of function. It can start bilaterally but typically affects one leg more than the other and takes a time span of 22 months to properly diagnose (Tucker, et al 2010). The athlete presented in this study is a 22-year-old female track athlete who has been throwing for Eastern for the past four years. The purpose of this case study is to describe the anatomy of compartment syndrome of the lower leg and discuss how compartment syndrome affects basic functions. This particular athlete had previously been treated for chronically tight calves for over a year until her definitive diagnosis.

OPEC vs Non-OPEC: The Current Estate of the Oil Market

Audel Rosas, McNair Scholar

Vandana Asthana, International Affairs

Due to the excessive output of oil in the market, oil prices have fallen from \$110 a barrel, Mid-June 2014, to less than \$40 a barrel. The fall of oil prices has greatly affected the economy of the Organization of Exporting Countries (OPEC) members and non-OPEC nations. This case study evaluates the history of OPEC, which held enormous power of stability in the market, and how the monopoly OPEC once had in the oil market is now being challenged by Non-OPEC nations. A Singer theoretic perspective of the international system suggest that the actions and interactions of the Saudi-Led cartel with the United States, who have risen in the oil market, has transformed the conditions of the coalition from a collective mentality into an “everyone for themselves” state. This transformation demonstrates the importance of studying the individual states in order to understand the international system as states within the coalition and outside the coalition are battling for economic viability in the oil market.

Synthesis and Characterization of Boron Containing Heterocycles

Robert Rosenthal

Ashley Lamm, Chemistry & Biochemistry

Over the past decade Boron dipyrromethene (BODIPY) dyes have received attention for their utility in biomedical imaging applications. My research focuses on the synthesis and characterization of boron containing heterocycles composed of five and six membered rings, which are fluorescent, similar to BODIPY dyes. The synthesis involves a schiff base reaction between carboxaldehydes and hydrazines. The ligand contains multiple nucleophilic nitrogens capable of bonding to boron. The synthesis, and characterization of these complexes will be presented

A Need for Political Activism in Education.

Aaron B. Ross

Martin Meraz Garcia, Chicano Education

This research paper will discuss how lack of political exposure in education turns a blind eye from the educational needs of Latino/a children within the United States. Lack of funding, resources and bilingual educators, create under representation of Latino/a's within classroom academics such as; history, social studies and language arts. By bringing attention to this topic this paper will hope to bring Latino/a education to the forefront of political activism to encourage funding for much needed programs within the Latino/a community.

Interactions Between Income and Gratitude

Adam Ross

Phil Watkins, Psychology

Gratitude has been shown in multiple studies in the domain of psychology to be related to happiness (e.g. Watkins, Kolts, Stone & Woodward). In this correlational study, we examined interactions between gratitude and a number of other factors: personal income, parental income, age, satisfaction with life, etc. We found a weak positive correlation between personal income and gratitude ($r=.091$), a weak positive correlation with compared parental income past-and-present and gratitude ($r=.163$), and a weak positive correlation between current parental income and gratitude ($r=.210$). Our study also confirmed the findings of past studies, with a moderate-to-strong positive correlation between Satisfaction with Life and gratitude ($r=.594$) and Subjective Happiness and gratitude ($r=.599$).

Henry's Law constant Determination Through FT-IR Spectroscopy

Kelly Sandall,

Anthony Masiello, Chemistry & Biochemistry

There is growing interest in the atmospheric chemical community in describing the reactions that occur between gases in the atmosphere and the water contained in clouds as these interactions play a vital role in air quality. Temperature dependent Henry's Law constants are key parameters in describing these interactions and they are often unavailable for many atmospheric species. This project aims to validate a relatively new method of determine Henry's Law constants for chemicals whose values are known in the literature. The method will then be extended to other species where Henry's Law values are lacking. The temperature dependence of the Henry's Law constant for these compounds will also be investigated such that models will be able to accurately predict aqueous-atmospheric chemical reactions under a variety of conditions.

Ecology of Ticks and Tick-borne Pathogens on the 30 Acre Trail at Turnbull National Wildlife Refuge (TNWR)

Robert Shadix

Krisztian Magori, Biology

Ticks are known carriers of bacterial pathogens that cause many diseases in humans and other large mammals. One known pathogen is *Rickettsia rickettsii* or Rocky Mountain Spotted Fever. Ticks require mammalian host such as mice, chipmunks, and/or dogs to complete their life cycle. The densities of these hosts can dictate the densities of ticks in a particular area. This study will be conducted on the 30Acre Lake Trail due to the high density of ticks and because it is the only known site of the *R. rickettsii* pathogen to be isolated on Turnbull National Wildlife Refuge (Wash.). I will trap small mammals (deer mice and chipmunks) four days a week and collect blood samples from mammals to test for the presence or absence of antibodies (IgG, IgM) to *Rickettsia* and other pathogens. Ticks will be collected once a week along the 30 Acre Lake Trail, from which DNA will be extracted for PCR testing and used to identify the presence or absence of *R. rickettsia* bacteria. I hypothesize that there is a high infection risk given the large tick density as well as host density.

Analysis of Wheat Consuming Arthropods for a Novel Glutenase

John Shuster, Sean Flannery, Kendall Bart, & Marie Chapman

Randall James, Institute of Science and Technology, North Central High School

Celiac disease affects 1 in 100 people in the United States. In the past 60 years the affected population has increased four-fold and continues to do so. Due to having an intolerance of gluten, this disorder causes damage to microvilli found in the small intestine. The only FDA approved treatment for celiac disease is a gluten free diet, which has proven to be problematic. Because of this, there is no cure for celiac disease that is effective as of now. Novel glutenases (the enzyme that digests gluten) found in wheat consuming arthropods have the potential to become a treatment for celiac disease. DNA extraction and sequencing is being used to identify novel glutenase genes in meal worms, and will be used on Green Bug Aphids, Russian Wheat Aphids, and additional wheat consuming arthropods. Glutenase specific primers have been designed and DNA extraction through DNA sequencing has been optimized. The goal is to sequence the whole glutenase gene in each arthropod and identify novel enzymes followed by cloning the gene into a bacterial vector to assay the enzymes characteristics

Sequencing Pieces of the Genomic DNA of Pseudomonas Fluorescence L5.1-96

Tatiana Siegel

Ruth Kirkpatrick, Biology, Spokane Falls Community College

The Washington State Economy depends on the production of wheat (*Triticum aestivum*). A serious threat to wheat cultivation is the fungus *Gaeumannomyces graminis var. tritici*, the causative agent of the Take-All disease. A known biological control for Take All is the bacterium *Pseudomonas fluorescens*. Many community colleges in Washington are collaborators in the COMGEN undergraduate research project to sequence the genome of *P. fluorescence* L51-96. This research seeks to discover genes behind the rapid wheat root colonization that characterizes *P. fluorescence* L51-96. In this project three clones of an E.coli genomic library with recombinant plasmids containing DNA fragments from *P. fluorescence* L51-96 were cultured and DNA was extracted, sequenced, and analyzed using BLAST online software. Two of the three DNA fragments sequenced produced clear nucleotide signal. Results suggest that one fragment contains code

for a “survival protein e,” and the second codes for a putative Oxidoreductase. Further research may discover which genes make *P.fluorescence* L51-96 a good wheat protector.

Carbon Sequestration with Biochar; A Possible Short-Term Mitigation to Climate Change and a Relevant Biomass Enhancer

Leonard Simpson, Martin Davis, Levi Simmons, & Lyudmila Lepekhina

Justin Bastow, Biology

In a response to climate change, new technologies and ideas are currently under examination. Carbon sequestration in soil using biochar has been studied extensively as a possible way to mitigate global warming. Amending soil with biochar has also been shown to enhance plant growth. We examined how amending soil with 6 and 12% biochar affected soil respiration, photosynthesis of grasses, and biomass accumulation in a local soil (broadax silt loam from the loess hills of Eastern Washington University). We used the Licor 6400 portable photosynthesis system to measure soil respiration and photosynthesis rates. A reduction in soil respiration was noted in our 6% amended soil treatments final readings when compared to their initial readings. Final photosynthetic rates increased in the experimental groups when compared to the control (0% biochar) replicates with the largest increase within the 6% group. Biomass accumulation in both the 6% and 12% treatments increased compared to the control group.

Comparisons of Structure and Magnetism in $MCl_2(\text{urea})_y$ and Substituted Urea Derivative Analogs

Abigail Smith

Jamie Manson, Chemistry & Biochemistry

Synthetic coordination polymers exhibiting unique magnetic properties are of great interest for providing experimental proof of quantum states of matter. Through hydrogen bonding and coordination of organic ligands to a transition metal ion, 1-, 2-, and 3-dimensional structures can be synthesized and studied using various techniques to determine crystal structure and microscopic magnetic properties. While some polymers of the form $MX_2(\text{urea})_y$ have been reported (where $M = \text{Mn, Ni, or Co}$; $X = \text{Cl or Br}$) such as $\text{MnCl}_2(\text{urea})_2$, this research aims to investigate how analogous polymers compare in structure and magnetic properties by substituting for NiCl_2 and CoCl_2 and for urea derivative ligands. A variety of solvent and solvent-free methods are being implemented to create these compounds. Currently, the crystal structure and magnetic properties of these compounds are being determined using x-ray powder diffraction and pulsed-field magnetization. Future experiments will require larger sample sizes for neutron scattering to identify the magnetic ground state.

Vapor Pressure Determination using Infrared Spectroscopy

Jonathan Smith

Anthony Masiello, Chemistry & Biochemistry

The vapor pressure of a variety of organic compounds has been determined at various temperatures by comparison of the intensity of infrared spectral signatures to quality-assured, calibrated infrared spectra. A gas saturator was used in conjunction with a temperature controlled bath to transport saturated vapor to an infrared gas cell where it was analyzed.

This approach allows for the accurate determination of vapor pressures, Antoine coefficients and enthalpies of vaporization for many compounds whose vapor pressures are too low for conventional analysis.

Influence of Mt. Mazama Volcanic Ash on The Optimal Water Content for Compaction of a Soil from a Residential Development in Cheney, Wa

Riley Snyder, Kaila Savage, Justin Blank, & Lourdes Garcia

Richard Orndorff, Geology

We tested soil from the Harvest Bluff (HB) development in Cheney, WA, which sits between loess hills to the north and the Four Lakes Ice Age flood path to the south. We also tested Mazama ash (5677 BC), which is abundant in the Spokane-Cheney region, to assess the impact of volcanic ash on soil compaction properties. HB soil is classified as low liquid limit silt, and Mazama ash is classified as non-plastic silt. We determined optimal water content for compaction to be 16% with a maximum dry unit weight of 101 pcf for HB soil, 41% and 64.8 pcf for Mazama ash, and 31% and 79.9 pcf for a 50% mixture by weight. This test reveals the amount of water necessary to maximize grain-to-grain contact within soil during compaction, which correlates with enhanced compressive strength. Addition of ash increases optimal water content for compaction and decreases maximum unit dry weight.

Analysis of Spokane River Watershed Soils for Metal Utilizing Chemoautotrophic Bacteria

David Song, Oliver Miller, & Christopher Golden

Randall James, Institute of Science and Technology, North Central High School

Geobacter sulfurreducens is a chemoautotrophic bacteria that can oxidize and reduce a wide variety of soluble and insoluble metals, as well as certain types of petroleum contaminants. While *Geobacter sulfurreducens* is not known to inhabit bodies of water surrounding Spokane, other chemoautotrophs of similar function could exist due to the presence of heavy metal contaminants left over from past mining operations. Core samples of dirt and silt were plated on a restrictive medium to ensure that they were chemoautotrophic. These samples were sequenced at specific loci and NCBI BLAST was used to compare their genomes with that of *Geobacter sulfurreducens*, in order to identify similarities and differences between their metabolic pathways to determine the potential of using them to clean up the pollution present in the lakes and rivers surrounding Spokane. If they prove to be particularly potent in their consumption of the heavy metals then they may prove to be powerful tools in the bioremediation of other contaminated bodies of water.

Use of DNA Barcoding to Identify Fish Consumed by Lake Trout and Smallmouth Bass

Jolene Strand, Samuel Gunselman

Paul Spruell, Biology

Understanding the diets of organisms may be interesting for a variety of reasons, ranging from quantifying the transfer of energy through an ecosystem to documenting differences in diet preference among individuals. Increasingly, non-invasive DNA-based molecular analysis of fecal material is used to determine the diet of terrestrial animals. However, collection of similar material from fish is not possible due to the nature of their wastes and the constraints of an aquatic environment. As a result, gut contents in fish are either collected lethally by removal of the stomach, or non-lethally using pressurized water to cause fish to regurgitate their stomach contents. However, the gut contents of fish often include fragments of individuals and are typically partially digested, making identification based on morphology difficult. The objective of our study was to use DNA barcoding to identify pieces of fish collected from the stomachs of two invasive fish species. DNA from these samples was extracted and then a 652-bp segment of the mitochondrial COI gene was amplified using the polymerase chain reaction. Sequencing of the amplified DNA is ongoing. Sequences will be compared to the *Barcode of Life Data System* to identify which fish species are prey for these introduced species.

18 Year Old Collegiate Male Basketball Player with A Labral Tear, Acetabular Ossification, and Femoral Acetabular Impingement

Leah Straub, Lisa Young, Dallas Challey

Perry Gerber, Biology

Femoral Acetabular Impingement (FAI) is a condition where the bones of the hip are abnormally shaped (Cheatham,2015). This abnormality causes the bones to rub together which causes damage to other structures in the hip. There are three types of FAI; pincer, cam, and combined. A pincer impingement occurs due to an extra bone that extends over the normal rim of the acetabulum. A cam impingement occurs because the femoral head is not round and cannot properly rotate in the acetabulum. In a combined impingement, both pincer and cam bone formations are present (Krych,2014). All three forms of impingement can lead to damage to both the labrum and acetabulum. Acetabulum Labral Tears (ALT) cause 92 percent of pain that appears in the anterior side of the hip joint (Cashman, Mortenson, & Gilbert, 2014). In this case study the subject is an 18 year old collegiate basketball player with chronic left groin pain. The patient received an X-ray and MRI on October 5th, 2015 and was diagnosed with an FAI, ALT, and acetabular ossification.

The Analysis of Carbonate in an Unknown Standard by a Non-Conventional Weak Base Titration

Kaitlyn Sutcliffe

Wes Steiner Chemistry & Biochemistry

Conventional titrations are an essential wet analytical technique used to determine the concentrations of unknown target compounds and/or quality control (QC) standards in a given solution. Many titrations depend upon an observable physical

change to determine the endpoint in the titration thereby signifying that an equivalence point has been reached. However, analysts can misinterpret where the equivalence points occur when simply relying on an observable physical change to take place. In order to avoid these uncertainties when determining an equivalence point for the analysis of carbonate in an unknown standard, a non-conventional weak base titration was setup using a data collection device, a drop counter, a pH sensor, and a plastic reservoir with a double stopcock valve fitting. This non-conventional titration setup has allowed for an accurate reading not only for the pH but also for the volume of titrant used in reaching the equivalence point. From data collection software the 2nd derivative can be easily calculated thus making the location of the equivalence points very clear.

Three Measures of Aggression Compared

Amanda Taylor, Marie Gray, Michaela Barrett, Sarah Wallis, & Jordan Liebrecht

William Williams, Psychology

The validity of several instruments used to screen for aggressive tendencies were assessed. Correlations were performed between the scales and sub-scales of three self-report aggression surveys, specifically: the Reactive Proactive Questionnaire, the Peer Conflict Scale, and the Functions of Aggression Scale. The assessed measures were proactive aggression (manipulative), reactive aggression (impulsive), overt aggression (threat or violence), and relational aggression (social/covert, e.g., gossip or exclusion). Convergent validity between scales was defined as strong positive correlations that were significantly different from zero. Divergent validity was defined as correlations between scales that were significantly different from each other. The three surveys were administered to 248 undergraduates using SONA, an on-line survey delivery system. The several types of aggression will be described in greater detail and specific hypotheses will be tested. The correlation matrices for the different scales will be reported; implications will be discussed; and recommendations will be made.

Sharing Power: Involving Students in Grading

Virginia Thomas

Justin Young, English

In his discussion of social-epistemic rhetoric in “Rhetoric and Ideology,” James Berlin notes that creating a “liberatory classroom” involves the use of dialogue to include and empower both students and teacher, thus creating an environment of trust, humility, and respect, with an emphasis on critical thinking. This can extend into grading; by reviewing the methods of other college teachers, my research explores how students can be involved in grading and the effects of sharing power over grades with students. If communication is emphasized, it appears that sharing some power over grades can be beneficial to both teacher and student.

To Be, or Not To Be, Old: Stereotypes of Older People and Using Communicative Interventions for Combating Them

Donald Tinker

Heather Robinson, Communication Studies

Negative attitudes toward age and aging have been, and remain, deeply rooted in global history. Men and women who no longer could contribute to communal survival in Neolithic cultures were cast aside, often left to die. “Senectus morbidus est” (“Old age is a disease”), the philosopher Seneca (4 BC–AD 65) said. By associating late life with disease and death, generations down the ages have justified the futility of granting the aged access to care (Achenbaum, 1978; Haber, 1983; Cole, 1992). Life expectancy and quality of life are critical issues to address now, not to mention distribution of resources and preparing a labor pool for future employment needs. However, because most people subscribe to stereotypes of older life experiences, they may not be able to develop effective policies, train a work force prepared to provide various levels of care, and anticipate the needs and concerns of family members of older people. In this poster presentation, students will analyze common stereotypes of older people, and counter those portrayals with theoretical and conceptually based communication strategies that can serve to shift perspectives of what it is to be older.

Characterization of the Orthorhombic Polymorph of NiCl₂(pyz)₂

Apostolos Toompas

Jamie Manson, Chemistry & Biochemistry

A new orthorhombic polymorph of NiCl₂(pyz)₂ has been identified. This study characterizes the physical and magnetic properties of this new polymorph and contrasts them with the previously studied tetragonal form. Measurements performed are heat capacity, structure by synchrotron x-ray powder diffraction, and magnetization by SQUID magnetometer. Included is an investigation into the most efficient method for synthesis of each polymorph in its purest form.

Identification and Analysis of the Heat-Regulating TRPV3 Gene in Mammoth

Jarret Walter, Spencer Niederstadt, & Samuel Sjoberg

Randall James, Institute of Science and Technology, North Central High School

There are many theories as to why Woolly 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 gene activates at 22-40C and has been shown to promote temperature sensing in mice. The TRPV3 gene hasn't been specifically published in association with mammoth, but when comparing the TRPV3 sequence for African elephant, and to other mammal's TRPV3 sequence, it appears to be relatively conserved. Utilizing PCR primers designed from conserved regions of the TRPV3 gene, DNA extracted from mammoth bone was successfully sequenced and compared to existing TRPV3 sequence. Mutations that alter protein function have implications concerning 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.

Analysis of the Consumption of Endangered Salmonids by California and Stellar Sea Lions Using qPCR

Kristen Wanke, Taylor Charbonneau, & Christina Negretti

Randall S. James, Institute of Science and Technology, North Central High School

The eastern stock of Steller sea lions (*Eumetopias jubatus*) and California sea lions (*Zalophus californianus*) inhabit the eastern Pacific coast, and often compete for the same prey sources. One of their main source of prey are salmonids, including the Chum, Chinook, Pink, Sockeye, Coho, and Steelhead Trout. By identifying prey hard parts from the scat of these two species through qPCR, we will be able to understand the sea lions' predation impacts on valuable and sensitive salmon stocks. Through the use of a Presence/Absence experiment with qPCR, we are able to identify which salmon species each bone fragment is. We are currently working towards optimizing our protocol and the use of Presence/Absence experimentation before we use any of our provided salmon bone samples. Once we optimize a successful protocol, we will be able to analyze how greatly the California and Stellar sea lions effect salmon populations and contribute ideas on how to alter conservation efforts in an attempt to keep the threatened and endangered salmon species from extinction.

The Effect of Two Anesthetics on Rainbow Trout (*Oncorhynchus mykiss*) Stress as Indicated By Water Cortisol Levels

Shawna Warehime

Allan T. Scholz, Biology

Anesthetics are used to reduce stress in tagging fish, but little research exists on the success to reduce cortisol (CRT: stress indicator). Objective was to determine if low-voltage electroanesthesia (LVEA) or AQUI-S 20E would impact CRT levels found in the water. LVEA was hypothesized to have less of an impact and have faster sedation / recovery times. Rainbow trout ($\sim 119 \pm 8.1$ mm) were divided into treatments LVEA, AQUI-S 20E, and control ($n=11, 11, 10$). Fish were placed in tanks, sedated for three minutes, and then put in recovery. Water samples were collected post recovery and CRT was extracted with a capture ELISA. Mean sedation times were faster in LVEA at 3.3 ± 2.4 sec than AQUI-S 20E at 407.5 ± 170.5 sec*. Recovery means were 29.9 ± 89.6 sec and 296.5 ± 108.6 sec ($p<0.0001^*$), indicating that LVEA is a successful anesthesia. CRT levels did not change over post recovery times ($p=0.8504$). There was a significant effect of CRT concentration by treatment ($p=0.0374$) and LVEA had the lowest impact, but the ELISA plate effect ($p=1.73 \times 10^{-7}$) indicates results may have been influenced.

The Use of HRT and Mild-Aversion Therapy to Treat Habitual Behaviors

Mary-Jo Waterbury

Charalambos Cleanthous, Psychology

The effectiveness of habit reversal training (HRT) and mild-aversion therapy were evaluated as a treatment package to reduce my chronic nail biting. This treatment package served to both decrease my nail biting behavior and extinguish it; however, I failed to include HRT's element of competing response training within the treatment package. As a result, a set of other habitual problem behaviors, including nail, skin and face picking, replaced my nail biting behavior. A second experiment was conducted in which competing response training was included in the treatment package to decrease my nail, skin and face picking behaviors. As a result, the behaviors significantly decreased, my self-esteem and self-efficacy

increased, and my fingernails grew 2 mm in length, on average, by the end of treatment. This suggests that mild-aversion therapy alone isn't effective in treating habitual behaviors; however, habitual behaviors are best treated when competing response training is included within a treatment package using HRT.

18 Year Old Male High School Athlete with Hypertrophic Cardiomyopathy

Jessica Weise

John Gerber, Physical Education, Health & Recreation

Background/ Purpose: Hypertrophic Cardiomyopathy (HCM) is becoming a more common pathology causing sudden death to young athletes on the field. HCM is characterized as a thickening of the heart muscle, most common between the septum between ventricles and is most common seen in the left ventricle. The thickening can block blood flow out of the left ventricle causing the heart to work harder. HCM can affect an individual at any stage of their life and can be due to a genetic gene or a secondary cause that affect the body likes AIDS or muscular dystrophy. Some individuals show no symptoms while others show severe complications such as trouble breathing and chest pains. In this study I will look at the pathogenesis of an athlete with HCM, surgical procedures, rehabilitation and conclusion of why this is a relevant topic in the sports medicine field.

Cell Phones: More distracting than a pad of paper?

Ryan Willcockson & Leah Golian

Jillene Seiver, Psychology

Thornton, et al. (2014) reported Ps performed worse on a very complex, cognitively demanding task when a cell phone was present. We replicated this study, using the same cognitive task and eliminating surveys that may have primed Ps to think about their cell phones. We predicted that a cell phone (P's own (n=19) or researcher's (n=18)), would produce poorer performance on the cognitive task than a pad of paper (n=19). Ps = 56 undergraduates (32 female), 18-54 yrs (M=28.35), taking psychology classes in Cheney (n=39) and Bellevue (n=17). A 2 (campus) x 3 (condition) x 2 (sex) ANOVA revealed no significant main effects ($f < 1$), and no significant interactions involving sex ($f < 1$). The interaction of campus x condition ($f(2, 44)=2.98, p=.061$) was nearly significant; the 3-way interaction ($f(2, 44)=3.23, p<.05$) was significant. The women on the Bellevue campus performed better than the men when there was a cell phone present, but the men outperformed the women when there was a pad of paper present; no such differences for the Cheney Ps. These results suggest that the power of cell phones to distract Ps from cognitively challenging tasks is idiosyncratic. Further research is needed to determine the factors that mediate the individual differences.

The Analysis of Iron in a Metal-Ligand Complex by Molecular Absorption Spectroscopy (MAS)

Chelsea Witter

Wes Steiner, Chemistry & Biochemistry

Molecular absorption spectroscopy, is often used for the qualitative and quantitative determination of trace levels of organic compounds in solutions. In this experimental assay two modern instrumental setups and an older instrument setup

were used to determine the concentration of iron in units of parts per million in unknown samples and a QC standards. These comparisons were accomplished in the first step by the reduction of all ferric ions, Fe³⁺, present in solutions to the ferrous ion, with the addition of hydroxylamine, in a pH 7-9 sodium acetate buffer. In the second step the reaction between Fe²⁺ and a chromophore containing organic compound, 1,10-phenanthroline (phen), could take place to form a light absorbing red-orange color [Fe(phen)₃]²⁺ metal-ligand complex. The absorption of the [Fe(phen)₃]²⁺ metal-ligand complex was then used to construct a Beer's Law calibration curve using six standard solutions versus the iron concentrations. From the equation of the linear line generated the concentration of iron in the unknown samples and QC standards could be determined.

Is it Worth it? The Impact of Football Facilities Spending on FBS Team Ranking

Coral Wonderly

Nathan Skuza, Economics

This research project investigates the relationship between spending on football facilities and the team's subsequent performance. This project differs from previous research because it employs a difference-in-differences model to estimate the impact of spending. A difference-in-differences model is an observational model that imitates experimental research, using control and treatment groups. For this project the treatment group includes any Football Bowl Subdivision (FBS) school that reported football facilities spending between 2001 and 2010 and the control group is any FBS school that did not report spending between 2001 and 2010. The impact of spending is important because colleges are spending larger amounts each year in hopes of improving their football program's performance and it may be at the expense of other university programs. The research findings will enable decision makers to make informed decisions about spending on football facilities in their community.

21 Year Old Female Collegiate Volleyball Player with Ankle Laxity

Charles Woolley, Shawna San Nicolas, & Noah Ziemann

Parry Gerber, Physical Education, Health & Recreation

Anterior Talofibular Ligament (ATFL) sprains are common injuries in volleyball. A sprain is the tearing of a ligament, either partially or completely. They generally heal on their own without surgical intervention within 4-8 weeks depending on the severity (American Academy of Orthopedic Surgeons). This case study will observe how a 20-year-old collegiate volleyball player progresses through a rehabilitation protocol after surgical intervention. Prior to surgery the athlete sustained previous ankle sprains during her freshman season, with the most serious injury occurring the summer before her sophomore year. Upon her visit with a foot/ankle specialist surgical repair was decided to be the best course. The surgery occurred in November and consisted of the repair of her left ATFL and the removal of bone fragments. The purpose of this study is to determine if surgical intervention is better than a conservative treatment and to determine the effectiveness of her rehabilitation program

Aging Policy Fair Abstracts

An Aging America: Prevalence, Implications, and Solutions

Sarah Baune

Henry-York Steiner, English

Long-term care is in dire need of reform and these models provide hope for an improved care structure. The elderly population in America is projected to continue to grow and stabilize at a high demographic density. Baby boomers began the shift in the age-pyramid, yet it is expected that this change will endure and be long-lasting. AS such, the care provided will drastically need to change. Boomers have already presented clinicians with the unusual increase in treatment for sports-related injuries and we can anticipate that they will continue to drive the demand for healthcare. As the baby-boomer generation progress into old age they will require treatment from chronic versus acute illness. The demand for nursing homes and long-term care is projected to increase with the increase of the elderly population. High turnover rates and unskilled care are a few of the obstacles that must be overcome in order to provide quality care to our growing elderly population. We have the capacity to change the culture of nursing homes and long term care as seen through various models.

The Prevention of Elder Financial Exploitation

Carmen Candelaria

Sharon Bowland, Aging Studies

There are five main types of elder abuse, physical, emotional, financial, sexual and neglect. One form of elder abuse that is especially prevalent is fraud and exploitation of finances. Education is key in the success of preventing fraud and elder abuse. Education on what to do if someone approaches and is attempting to commit fraud and what to do after it happens. Teaching elderly clients, the most common kinds of scams can also be effective, so that they know what to be on the look out for. Working with other disciplines in interdisciplinary teams can also be very beneficial to the prevention of financial exploitation. Professionals such as bankers, lawyers and doctors are also coming together to prevent this abuse. Prevention can be successful through the education and empowerment of these elderly people with knowledge in order to properly prevent and keep them safe. With trainings and inspiration for these elderly people provided by various agencies, financial exploitation really can be prevented and reduced by lowering a person's vulnerability by serving as protective factors.

Gambling Addiction and Impulse Control in Parkinson's Patients

Erin Daniels

Sharon Bowland, Social Work

My focus is on medication that make people with Parkinson's more prone to gambling/sex addiction and poor impulse control. A review of various medications that treat Parkinson's to see if the medications are a triggering factor of the addiction. This subject has not really be covered in any research. I am able to find information of gambling/sex and poor impulse control but I am interested in seeing if it is trigger by medication or if this is an aspect of the Parkinson's disease progression. My methods for investigations would be literature review/websites and firsthand account of the effects of this disease and addictions. Results: In progress, but I have found websites and articles that talk about this subject but I am working on looking at medications that might trigger increases of these symptoms. Finding: are there other medications/treatments available for Parkinson's that will not trigger addictions and if it is the medicine to educate the doctors about the side-effects and to provide treatment for patients suffering with gambling/sex addiction or poor impulse control.

LGBTQ Disparities In Spokane

Erin Daniels

Sharon Bowland, Social Work

Older adults that Identify as LGBTQ in Spokane, and the lack of resources, gaps in services, and medical language that hinders care for the LGBTQ community.

Caregiver Challenges and Supports

Megan Dicken

Sharon Bowland, Addiction Studies

This poster will highlight the challenges faced by unpaid caregivers, focusing primarily on those who are caregivers for aging individuals. The information from the poster is based off of a literature review. The poster will also address different kinds of supports and resources available to those who are unpaid caregivers, focusing mainly on local resources for caregivers. This research is important in order to bring awareness to the vast number of unpaid caregivers, and the challenges the face on a daily basis. This research will also seek to create a tool-kit of supports in Spokane County. Through understanding the challenges of unpaid caregivers, professionals in the field are better able to advocate alongside those caregivers on the macro and mezzo levels.

Positive Effects of Art Therapy and its Need in Senior Assisted-Living in Spokane County

Andrea Hesler

Sharon Bowland, Aging Studies

After observing a community of older adults at Park Tower Apartments, I noticed residents often isolated. Mandala art motivated them to socialize, express themselves, and gave a sense of accomplishment. I investigated this topic by analyzing literature reviews on the effects of art therapy and conducted interviews with an art therapist and 10 Spokane County assisted living facilities. Literature review studies clarified the scientific basis for my observations that art therapy is highly beneficial in older adults. Based on my review of research and the interviews, I concluded that residents in assisted living would likely benefit from an increased focus on the arts therapies. These facilities do their best to offer art but sadly budgets do not allow use of a certified art therapy program, which would be the most reliable and beneficial method to deliver quality certified art therapy to their residents. Interviews with the staff revealed art therapy programs should be considered as an important cultural shift and essential component for those living in institutional settings.

Sexuality & Dementia in Long Term Care

Kimberly Le

Sharon Bowland, Social Work

Sexual expression and emotional intimacy does not disappear with age, yet it is usually addressed when specific problems arise, such as abuse of a cognitively impaired patient. While nursing home residents have certain rights and protections under law, none of them acknowledge the need for mutual social relationships and sexual self-expression. This project aims to educate on how older adult sexuality may be addressed in skilled nursing facilities and explores whether resident rights should be revised to include a new right: the right to mutual social relationships and sexual self-expression provided that it does not infringe on the rights, health or safety of others. Several peer-review articles will be explored as a basis for policy-making changes and stimulating research. Recommendations include implementing policies addressing sexuality in long term care facilities on a national scale that ensures the health and safety of others, while still honoring the rights, dignity and autonomy of individual residents.

Trauma Informed Responses for Residents in Long Term Care Facilities

Virginia Parker

Sharon Bowland, Social Work

As our baby boomers age there is an expected rise in number of residents living in long-term care facilities (LTCF). In addition to the increase of older adult in LTCFs, over 50% experienced at least one traumatic experience through their life course. These traumatic experiences can impact coping skills, resiliency, thought processes, behaviors and relationships. Trauma-Informed Care (TIC), an evidence based approach, recognizes the impacts of adverse experiences, provides tools for LTCF staff to respond appropriately avoiding re-traumatization of residents and reduces vicarious adverse experiences for LTCF staff. My investigation of literature review includes Eastern Washington University's library database resulting in limited information of TIC modalities for older adults living in LTCFs. With limited available information for TIC within older adult populations, I propose to instigate change through EWU's symposium by promoting awareness of the need for cultural change in LTCFs so that TIC modalities are considered which can increase overall quality of life for staff and residents.

Looking for our Grandparents

Carina Silva

Sharon Bowland, Social Work

Families come in different sizes, shapes and forms. In the state of Washington there are approximately 43,000 relatives caring for relative children. Although all relatives matter, the presentation will focus on the unique experiences of grandparents, through an extensive literature review. The poster will provide insight on the demographics of grandparents raising grandchildren. It has been noted through the Department of Social and Human Services that some support is provided for grandparents raising grandchildren; is that enough? This poster presentation will focus on the challenges Washingtonian grandparents face when raising their grandchildren. The poster will explore the financial/legal, emotional and social implications of taking care of a grandchild. Information regarding resources and supports provided by the state will also be discussed throughout the poster. Finally, the presentation will provide recommendations to improve the kinship care system within the state of Washington. The research for this project is not yet completed and is an ongoing project.

Ableism and Ageism in Dementia Care

Shelli Speranzi

Ryan Parrey, Disability Studies & Universal Access

In what ways are ageism and ableism feasibly contributing to practices in dementia care and what might be done about it? In general people given the right circumstances will find themselves a witness to, recipient of, or purveyor of ageism and ableism. It's a question for professionals that interact with older people with disabilities or disabled people that are aging, because intentionally or not they could be negatively impacting the demographics they serve. The research question is investigated via literature review. Addressing issues such as identifying the older people with dementia as "incapable" or "perpetual children". Provided are possible stepping stones towards solutions to these issues using what currently being done to improve living conditions in dementia care practices. The importance of education on these issues is emphasized and proposed is a need for more unity between what is being taught in aging studies and disability studies courses. Specifically on their use of the strengths based approach with an emphasis on health verses with a universal access emphasis.

Keeping Elders at Home through Patient Activation

Michelle Wasco

Anna Tresidder, Health Services Administration

This study focuses on six programs in rural Eastern Washington that aim to improve Patient Activation Measurements (PAM). The PAM instrument is validated and has been shown to reliably predict future ER visits, hospital admissions and readmissions, and medication adherence. The six programs are unique in services provision, but each speaks to a specific need for that county and aims to improve health outcomes through health coaching for activation for rural seniors. All programs aim to improve clients' connection to a variety of resources, to increase the likelihood that clients are able to continue living in their current independent setting. PAM scores of Levels 1 and 2 indicate those most in need of interventions. Scores of Levels 3 and 4 indicate positive change occurring and an improved likelihood of maintaining positive changes. Nearly 33% of the participating elders observed are level 1 or 2, indicating that their engagement in their own health has much room to improve. This is baseline data and participants will be reassessed every 6 months for the next year.

Older African-American Women: Finding Safety in a Landscape of Trauma

Ayani Woge

Sharon Bowland, Aging Studies

Little is known about the long term effects of child abuse, sexual assault and domestic violence for ethnic/racial minority older women. Twenty-six African-American women aged 55+ who were trauma survivors living in a low income community discussed their life histories in the current investigation. Twenty-five out of 26 women identified a history of interpersonal trauma. Participants will become familiar with some of the current experiences of trauma in this community of women living in public housing. Also the effects of historical trauma will be discussed as a way to explain the current conditions of the community and its effects on the residents. Main concerns included a continuation of trauma experiences through sexual harassment, exposure to drugs and alcohol and the lack of safety in their own homes. Findings from this study have policy implications for health and mental health due to Housing and Urban Development (HUD) rules that allow mixed age housing in communities with frequently vulnerable older adults.

Health Care Access Disparities within Spokane County, WA

Coral Wonderly

Nathan Skuza & German Izon, Economics

This research paper examines the possible presence of health care access disparities within Spokane County, Washington. It is important to policy makers and researchers in public health, urban planning, and economics to know where health access gaps exist because these disparities can contribute to health and socio-economic inequality. Although most of the research on health disparities has been at the county level, we use census tract level data to identify any unseen gaps within a county. Health care access measures are calculated using methods similar to those used by the Robert Wood Johnson Foundation's County Health Rankings and Roadmaps program. Health care access is composed of three measures: number dentists, number of primary care physicians, and share of the population that is uninsured. For each census tract a health care access score is calculated. The impacts of socio-demographic factors on the health care access scores are estimated using multivariate regression. GIS is used to explore the spatial patterns of health care access disparities within Spokane County.

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Design by Kira Kallem, *Visual Communication & Design*



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