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Conference

2013, 24th Annual JWP Conference

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Apr 20th, 8:00 AM - 4:00 PM

## Complete 2013 Program

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CENTER FOR  
NATURAL SCIENCES  
**SATURDAY**  
APRIL 20, 2013

<http://www.iwu.edu/jwprc>

*The conference is named for explorer and geologist John Wesley Powell, a one-armed Civil War veteran and a founder of the National Geographic Society who joined Illinois Wesleyan University's faculty in 1865. He was the first U.S. professor to use field work to teach science. In 1867 Powell took Illinois Wesleyan students to Colorado's mountains, the first expedition of its kind in the history of American higher education. Later, Powell was the first director of the Smithsonian Institution's Bureau of Ethnology.*

Twenty-Fourth Annual

John Wesley Powell • IWU

# Student Research Conference

Center for Natural Sciences and Ames Library

Saturday, April 20, 2013

8:30 a.m. – 3:00 p.m.

*Official Program*

## **ACKNOWLEDGEMENTS**

The John Wesley Powell Research Conference Committee would like to acknowledge the contributions of several individuals.

This conference could not have been a success without the contributions of Pat Neustel, Associate Provost's Office, in organizing many aspects of the conference and assembling and printing the program booklet.

The invaluable assistance provided by Mike Welsh and his staff at Sodexo Campus Services in setting up breakfast, luncheon and other refreshments is gratefully acknowledged.

The assistance of Information Technology Services provided by Patrick McLane in setting up computer equipment in all rooms along with Ann Aubry and Michael Gorman for registration and website consultation is greatly appreciated.

John Wesley Powell Research Conference Committee:

- David Vayo (Music)
- Leah Nillas (Educational Studies)
- Stephanie Davis-Kahl (Library)
- Jeungbo Shim (Business Administration)
- Michael Seeborg (Economics)
- Joseph Plazak (Music)

## **SCHEDULE OF EVENTS**

**Saturday, April 20, 2013**

8:30 a.m.	Continental Breakfast and Poster Setup	Science Commons and Ames Library
9:00 a.m.	Poster Session A	Science Commons
	Educational Studies Posters –Session 1	Ames Library
10:00 a.m.	<i>Oral Presentations – Session One</i>	CNS and Beckman Auditorium
11:00 a.m.	Educational Studies Posters –Session 2	Ames Library
11:00 a.m.	<i>Oral Presentations – Session Two</i>	CNS
12:15 p.m.	Luncheon	Young Main Lounge
	Keynote Address: John Churchill	
	Music Student Performances	
2:00–3:00 p.m.	Poster Session B	Science Commons
2:00–3:00 p.m.	Senior Art Show and Critique	Merwin and Wakeley Galleries

**KEYNOTE SPEAKER**

**'I Said To Him, "Well, Lord Russell, What's It All About?"  
And Do You Know, *He Couldn't Tell Me!*'**

John Churchill

Secretary, The Phi Beta Kappa Society

The explosive growth in available knowledge, and the ease with which it can be accessed, threatens us, maybe paradoxically, with problems about its usefulness and relevance. As more and more comes to be known, we become less and less certain about which bits matter. We become less secure in presupposing a common matrix of shared understanding, and it can even seem that any contention can be buttressed with some selection of facts, drawn from somewhere.

Once the notion of "the unity of knowledge," assured that all that was or could be known stood, potentially, in some relation, itself knowable, to everything else that was or could be known. But that notion is, to say the least, out of fashion. The age of the expansion of knowledge is an age of differences: different languages and vocabularies, different research programs and methods, and a vastly expanded understanding of the way that the disciplines whose pursuit yields knowledge are themselves historical in nature, cultural artifacts, human projects.

This perspective greatly complicates questions about the meaning and importance of new knowledge. Why does it matter? What does it have to do with anything people care about? What does it *mean*? Unless we address such questions, the relevance of new knowledge will remain, at best, in doubt, or worse, open to unanticipated and unchallenged appropriation in ways we might never have imagined.

John Churchill is secretary of the Phi Beta Kappa Society, the nation's oldest academic honorary society. Founded in 1776 at the College of William and Mary, Phi Beta Kappa has 283 chapters on college and university campuses and well over a half-million living members. Its purpose is to advocate and recognize excellence in the study of the liberal arts and sciences. As secretary, Churchill is the Society's chief executive officer and the head of its national office.

Churchill was born in Hector, Arkansas, and was reared in Little Rock. He was educated at Rhodes College, where he was inducted into Phi Beta Kappa, at the University of Oxford, where he studied as a Rhodes Scholar, and at Yale University, where he was awarded the Ph.D. in 1978.

Churchill was formerly vice president for academic affairs and dean of the college at Hendrix College, where he also served as professor of philosophy and twice as interim president. In the 1970s, he served as assistant American secretary to the Rhodes Scholarship Trust, and has been active since that time in the selection of Rhodes Scholars.

His scholarly interests include the philosophers Ludwig Wittgenstein and David Hume, as well as topics in the history of philosophy, the philosophy of religion, and the philosophy of liberal education.

His publications include several dozen articles in these and related fields in journals in the U.S. and the U.K., book chapters in the U.S. and Germany, several dozen reviews and critical notes, as well as essays and stories in the popular press and college magazines. He has taught courses in the history of philosophy, philosophy of religion, logic, ethics, Wittgenstein, Hume and interdisciplinary topics involving texts from philosophy, literature, religion, history, and the classics. He writes a weekly blog for Phi Beta Kappa titled *From the Secretary*, available on the ΦBK website.

Churchill's professional activities have included membership on the Board of Directors of the American Conference of Academic Deans and the Arkansas Endowment for the Humanities, founding head of the Arkansas Governor's School's Area II, service as chair of the Council of Deans of the Associated Colleges of the South, and editorial work for *The Thomist*, *The Southern Journal of Philosophy*, *The International Philosophical Quarterly*, and *Choice* magazine. He was a Danforth Foundation associate, a program review panelist for the National Endowment for the Humanities, and for 13 years a consultant/evaluator and team chair for the Higher Learning Commission of the North Central Association of Colleges and Schools. He is a former president of the National Humanities Alliance and a member of the Cosmos Club of Washington, D.C. Churchill has been married since 1972 to Jean Hill Churchill, and they have three children: Will (b. 1977), Mary Katherine (b. 1980), and Hugh (b. 1982).

# **STUDENT PARTICIPANTS**

## **Oral and Poster Presentations**

Janette Abbasi	P1	Alice Fontana	P27
Benjamin Aberle	O2.2	Kyle French	P26
Walker Ambrose	O2.4	Melissa Fuesting	P25
Elise Anderson	ES	Yizhe Gao	P28
Hillary Anderson	ES	Caitlin Garrison	ES
Rachel Aron	P2	Logan Garthe	P2
Anton Baltuska	P3	Juan GomezVelez	P26
Blake Beehler	P2	Tara Gracer	O4.1, O13.3
Sarah Berk	P4	Melissa Gaffy	ES
Akash Bhatia	P5	Cory Grapenthien	ES
Michelle Bilek	ES	Zoe Gross	O1.1
Samuel Birsa	P6	Alicia Gummess	P29
Matthew Bishop	O2.3	Victoria Halevy	P30
Jennifer Boll	P7	Elizabeth Hancock	O7.3
Kevin Bowers	P8	Lauren Henry	P32
Sarah Boyle	O3.2	Laura Hones	P31
Helen Brandt	P9	Melissa Huang	O5.1
Jessica Brewer	ES	Karen Jaslow	O5.2
Nina Butler	P10	Christopher Jent	P33
Samantha Calhoun	ES	Philip Johnson	ES
Kevin Carey	O3.4	Netherland Joiner	P2
DeAnna Carter	ES	Amanda KehrSmith	P34
Rachel Casali	O11.3	Tess Kelley	P2
Kimberly Cheffer	P11	Daniel Kenny	O11.1
Navika Chhabra	P12	Lauren Killough	P2
Caitlin Collins	ES	Nahee Kim	P35
Emma Craig	ES	Maria Klingele	O10.1
Ivy Craig	P14	Amanda Knezovich	ES, P36
Madeline Cross	P15, P17	Kellye Kohn	P27
Joseph Daniels	P13	Yelei Kong	O1.2
Hillary Davis	ES	Justyna Koscielniak	P37
Robert Diehl	O4.3	Michal Kozdronkiewicz	P2
Meghan Dinkle	P1, P18	Jessica Kraut	P2
Olivia Dunham	O12.1	Elizabeth Kuehn	P38
Zachary Eckert	P16	Benjamin Lamm	P39
Rosaleen Egan	ES, P20	Jennifer Lang	P2
Kaitlyn Eichinger	P21	Daniel LaRocca	ES
Mohamed ElKabbash	P6	Amanda Larsen	P40
Rachel Ende	P2	Michelle Larson	P41
Elizabeth English	P23	Will Lawrence	O7.1
Elizabeth Exo	ES, P24	Jiwon Lee	P42
Ethan Fischer	P25	Andrea Lenz	ES



THE JOHN WESLEY POWELL STUDENT RESEARCH CONFERENCE - APRIL 2013

Colleen Leonard	P42	Katelyn Rowley	O7.4
Qingyu Li	O6.1	Jacob Roy	P60
Xi Lin	P43	Elizabeth Rubel	O12.4
Gregory Liske	O15.1	Sylvia Rusin	O9.1, P61
Boxiang Liu	P44, P45	Ellie Savage	ES
Jennifer Long	O11.2	Samantha Schmelter	P1, P18
Katrina Lukes	P46	Jennifer Schreiber	P62
Madeline Lyons	P43	Melissa Seeborg	O7.2
Abigail Lyons	Music	Olivia Semeria	ES, P63
Ammar Malik	O8.2	Sunny Shah	P25
Alejandro Mancera	P47	Barbara Skrobacz	O2.1
Divya Mani	P48	Austin Smiley	O6.2
Emily Manninen	O14.3	Hannah Smith	P7
Michael Mayberger	O13.4	Sijia Song	O13.1
Ryan McGonagle	P49	Sejal Soni	ES
Lina Meilus	O1.3	Brian Sorich	P44
Kieran Meyer	P12	Jordan Stewart	P64
Scott Meyers	ES, P51	Janna Strain	O1.4
Brenda Miller	P50	Conor Strejcek	Music
Nickolas Miller	P33	Kristy Strong	O14.2
Alejandro Monzon	O4.2, O9.3	Raven Stubbs	O6.3
Timothy Mueller	P52	Kenneth Suevel	O12.2
Nabeel Mumtaz	P25	Emily Susin	O5.3, ES
Jason Murphy	P53	Emily Susina	O3.5, O12.3
Mary Nafziger	P54	Mark Swanson	P53
Aravind Nagavalli	O13.2	Marlena Szewczyk	P17
Niccole Nelson	P18	Sarah Takushi	P65
Nathaniel Nesbit	ES, P44	Lucas Tuazon	Music
Patrick Nevels	P55	Kurt VanNess	O8.3
Tung Nguyen	P56	Lauren Venlos	ES
Nick Nichols	O8.1	Theresa Ward	O3.1
A. Nykolajiszyn-DeSantis	ES	Chelsea Werries	P66
Colleen O'Connor	O3.3	Victoria Whitaker	P27
BetsyAnne Pacey	ES	Abigail White	P59
Taylor Parsons	ES	Stephen Whitfield	P67
Nora Peterson	P57	Whitney Wilkerson	O10.3
Stephanie Pierson	P58	Kylene Wolfe	ES, O9.2
Matthew Piotrowiak	P2	Ethan Wood	ES
Lauren Podgorski	P59	Anna Woodruff	O14.1
Margaret Principi	ES		
Prartana Ramachandran	P2		
Karianne Randick	ES		
Timothy Reardanz	O10.2		
Samantha Reiter	O5.4		
Lauren Rock	ES		
Kate Roessler	P1		

**BA/BFA SENIOR CRITIQUE HONORS  
SCHOOL OF ART**

**Saturday, April 14, 2012, 2:30 p.m., Merwin and Wakeley Galleries**

**Student Presenters:**

Riley Blindt

Leeya Jackson

Dustin Springer

*Refreshments will be served*

**MUSIC COMPOSITION STUDENT PRESENTATIONS**

**Saturday, April 20**

**12:15 p.m.**

**Young Main Lounge, Memorial Student Center  
(as part of the conference luncheon program)**

Le Dormeur du Val

Connor Strejcek '14

The Lost Left Hand Rag

Abigail Lyons '14

Verbi Ore

Lucas Tuazon '13

- I. Quod Circim it
- II. Un Uomo Saggio Sa
- III. Il Buio
- IV. Circum Veniet

Music Presentation

**LE DORMEUR DU VAL**

Conor Strejcek and David Vayo\*  
School of Music, Illinois Wesleyan University

This composition, *Le Dormeur du Val*, is a setting of a French poem (of the same name) by Jean Nicolas Arthur Rimbaud. The title can be literally translated as “The Sleeper of the Valley,” or sometimes poetically as “Asleep in the Valley.”

*Le Dormeur du Val* is the first piece I completed for a choral ensemble, and consequently my first attempt at setting a text to music. My goal in this endeavor was to portray as accurately as possible the meaning of the words through the accompanying music. To this effect, I employed various methods of text painting throughout the composition. For example, the rising lines which accompany the description of the sun shining on the mountain, the military rhythm in the bass when the soldier is introduced, and the “rocking” motion when the poem speaks of cradling with warmth. Sadly, most of these instances are only truly effective if one understands the words which are being sung – something which I hope can be understood if one follows along with the words as the piece is sung.

Le Dormeur du Val (Original French)

C'est un trou de verdure où chante une rivière  
Accrochant follement aux herbes des haillons  
D'argent ; où le soleil, de la montagne fière,  
Luit : c'est un petit val qui mousse de rayons.  
Un soldat jeune, lèvres bouche ouverte, tête nue,  
Et la nuque baignant dans le frais cresson bleu, Dort ;  
il est étendu dans l'herbe sous la nue,  
Pâle dans son lit vert où la lumière pleut.  
Les pieds dans les glaïeuls, il dort. Souriant comme  
Sourirait un enfant malade, il fait un somme : Nature,  
berce-le chaudement : il a froid.  
Les parfums ne font pas frissonner sa narine ;  
Il dort dans le soleil, la main sur sa poitrine,  
Tranquille. Il a deux trous rouges au côté droit.

Asleep in the Valley (Poetic Translation)

A small green valley where a slow stream flows  
And leaves long strands of silver on the bright  
Grass; from the mountaintop stream the Sun's  
Rays; they fill the hollow full of light.  
A soldier, very young, lies open-mouthed,  
A pillow made of fern beneath his head,  
Asleep; stretched in the heavy undergrowth,  
Pale in his warm, green, sun-soaked bed.  
His feet among the flowers, he sleeps. His smile  
Is like an infant's - gentle, without guile.  
Ah, Nature, keep him warm; he may catch cold.  
The humming insects don't disturb his rest;  
He sleeps in sunlight, one hand on his breast;  
At peace. In his side there are two red holes.

Music Presentation

**THE LOST LEFT HAND RAG**

Abigail Lyons and David Vayo\*  
School of Music, Illinois Wesleyan University

The Lost Left Hand Rag is meant to be a joke about a performer who is messing up the piece primarily in the left hand part. In the beginning, the player knows the piece pretty well. Already by the repeat of the A material though, he starts missing a few chords and progressively makes more and more blunders until the end, which is a complete train wreck. All of the mistakes are written in the score and there are also some notes for the performer such as "stare at the piano as if you were invisible" and "rit. while thinking." Near the end there are chords in the left hand that are stems with x's instead of note heads where the player is meant to slap his hand on the piano. A lot of inspiration for this piece came from all the mistakes I have made over the years while playing.

Music Presentation

**VEBRI ORE**

Lucas Tuazon and David Vayo\* and Joseph Plazak\*  
School of Music, Illinois Wesleyan University

*Verbi Ore* translates roughly from Latin to “Word of Mouth.” The point of the title lies with the texts that I set to music, which are three separate sayings or ideas that I have encountered in my life. The first of those sayings is, “That which goes around comes around. Honor the balance.” The idea of karma has always been a big part of my life and I set it to a short chant melody in Latin. The second text is, “A wise man knows that he knows nothing.” The idea behind this text, set in Italian, is that scholars are constantly learning. The third text is, “The Darkness shall destroy the light. This darkness is eternal. Destroy!” and is also set in Italian. This concept was, honestly, was inspired by antagonists in many stories thinking the evil way is the best way to live. And the fourth movement’s text is exactly the same as the opening movement making sure that I, the composer, honored the balance.

**ORAL PRESENTATIONS- SESSION 1**  
**10:00 – 11:00**  
**CENTER FOR NATURAL SCIENCES (E101)**  
**MODERATOR: Bradley Gresik**

- 1.1 Zoe Gross (Political Science)
- 1.2 Yelei Kong (Political Science)
- 1.3 Lina Meilus (International Studies)
- 1.4 Janna Strain (Religion)

**ORAL PRESENTATIONS - SESSION 2**  
**10:00 – 11:00**  
**CENTER FOR NATURAL SCIENCES (E102)**  
**MODERATOR: Cristina Petcu**

- 2.1 Barbara Skrobacz (Economics)
- 2.2 Benjamin Aberle (Economics)
- 2.3 Matthew Bishop (Economics)
- 2.4 Walker Ambrose (Economics)

**ORAL PRESENTATIONS - SESSION 3**  
**10:00 – 11:00**  
**CENTER FOR NATURAL SCIENCES (E103)**  
**MODERATOR: Kevin Carey**

- 3.1 Theresa Ward (English)
- 3.2 Sarah Boyle (English)
- 3.3 Colleen O'Connor (English)
- 3.4 Kevin Carey (English)
- 3.5 Emily Susina (English)

**ORAL PRESENTATIONS - SESSION 4**  
**10:00 – 11:00**  
**CENTER FOR NATURAL SCIENCES (E104)**  
**MODERATOR: Mallika Kavadi**

- 4.1 Tara Gracer (Environmental Studies)
- 4.2 Alejandro Monzon (Sociology and Anthropology)
- 4.3 Robert Diehl (Sociology and Anthropology)

**ORAL PRESENTATIONS – SESSION 5**  
**10:00 – 11:00 NOON**  
**CENTER FOR NATURAL SCIENCES (E105)**  
**MODERATOR: Christopher Tatara**

- 5.1 Melissa Huang (Greek and Roman Studies)
- 5.2 Karen Jaslow (MCLL)
- 5.3 Emily Susin (Literature and Culture)
- 5.4 Samantha Reiter (Literature and Culture)

**ORAL PRESENTATIONS - SESSION 6**  
**10:00 – 11:00**  
**CENTER FOR NATURAL SCIENCES (C101)**  
**MODERATOR: Breck Seitz**

- 6.1 Qingyu Li (Business Administration)
- 6.2 Austin Smiley (Business Administration)
- 6.3 Raven Stubbs (Theatre)



**ORAL PRESENTATIONS - SESSION 7**  
**10:00 – 11:00**  
**CENTER FOR NATURAL SCIENCES (C102)**  
**MODERATOR: Elizabeth Liubicich**

- 7.1 Will Lawrence (Economics)
- 7.2 Melissa Seeborg (Economics)
- 7.3 Elizabeth Hancock (Economics)
- 7.4 Katelyn Rowley (Economics)

**ORAL PRESENTATIONS – SESSION 8**  
**11:00 – 12:00 NOON**  
**CENTER FOR NATURAL SCIENCES (E101)**  
**MODERATOR: Alan Russian**

- 8.1 Nick Nichols (Computer Science)
- 8.2 Ammar Malik (Computer Science)
- 8.3 Kurt VanNess (Mathematics)

**ORAL PRESENTATIONS - SESSION 9**  
**11:00 – 12:00 noon**  
**CENTER FOR NATURAL SCIENCES (E102)**  
**MODERATOR: Rosie Egan**

- 9.1 Sylvia Rusin (Hispanic Studies)
- 9.2 Kylene Wolfe (Hispanic Studies)
- 9.3 Alejandro Monzon (Hispanic Studies)

**ORAL PRESENTATIONS - SESSION 10**  
**11:00 – 12:00 noon**  
**CENTER FOR NATURAL SCIENCES (E103)**  
**MODERATOR: Katrina Lukes**

- 10.1 Maria Klingele (French and Francophone)
- 10.2 Timothy Reardanz (French and Francophone)
- 10.3 Whitney Wilkerson (French and Francophone)

**ORAL PRESENTATIONS – SESSION 11**  
**PHI BETA KAPPA SPONSORED INTERDISCIPLINARY SESSION**  
**11:00 – 12:00 NOON**  
**CENTER FOR NATURAL SCIENCES (E104)**  
**MODERATOR: Katie Rose Brosnan**

- 11.1 Daniel Kenny
- 11.2 Jenny Long
- 11.3 Rachel Casali

**ORAL PRESENTATIONS - SESSION 12**  
**11:00 – 12:00**  
**CENTER FOR NATURAL SCIENCES (E105)**  
**MODERATOR: Emily Susina**

- 12.1 Olivia Dunham (Greek and Roman Studies)
- 12.2 Kenneth Suevel (Greek and Roman Studies)
- 12.3 Emily Susina (Greek and Roman Studies)
- 12.4 Elizabeth Rubel (Greek and Roman Studies)

**ORAL PRESENTATIONS - SESSION 13**

**11:00 – 12:00 noon**

**CENTER FOR NATURAL SCIENCES (C102)**

**MODERATOR: Andrea Kerwin**

- 13.1 Sijia Song (Economics)
- 13.2 Aravind Nagavalli (Economics)
- 13.3 Tara Gracer (Economics)
- 13.4 Michael Mayberger (Economics)

**ORAL PRESENTATIONS - SESSION 14**

**11:00 – 12:00 NOON**

**CENTER FOR NATURAL SCIENCES (C101)**

**MODERATOR: Victoria Folse**

- 14.1 Anna Woodruff (Psychology)
- 14.2 Kristy Strong (Nursing)
- 14.3 Emily Manninen (Nursing)

**ORAL PRESENTATIONS – EDUCATIONAL STUDIES – SESSION 15**

**10:00 – 11:00**

**AMES LIBRARY – Beckman Auditorium**

**MODERATOR: Nathaniel Nesbitt**

- 15.1 Gregory Liske

Presentations are 12-15 minutes in length. If time permits, there will be a question-and-answer period for all presenters following the final presentation

Oral Presentation O1.1

**IT'S MY PARTY SYSTEM AND I'LL INSTITUTIONALIZE IF I WANT TO:  
PARTY SYSTEM INSTITUTIONALIZATION IN YOUNG DEMOCRACIES**

Zoe Gross and Kathleen Montgomery\*  
Political Science Department, Illinois Wesleyan University

Scholars today mostly agree that party system institutionalization (PSI) is a key ingredient in the transition to a functioning democracy. The question of whether PSI matters is more or less resolved. What is less clear is a general theory of what can help new democracies reach a high level of PSI. The aim of this research is to discover the pre-conditions and elite choices that enhance the level of PSI in new democracies. This research uses two Most Different System designs to explore the results of ten hypotheses that test the relationship between the level of PSI and an array of independent variables in country cases across the globe. Analyses reveal that there is no single magic variable or even a single set of factors that reliably lead to PSI across cases. What does emerge is the importance of elite behavior and choices during the initial regime change.

Oral Presentation O1.2

**WHY THEY RISE UP, OR NOT  
A STUDY OF LINGUISTIC MINORITIES AND  
ETHNIC-NATIONAL MOBILIZATION**

Yelei Kong and Kathleen Montgomery\*  
Political Science Department, Illinois Wesleyan University

Most theories of nationalism focus on majority nationalism and do not provide an adequate explanation of the inaction of most ethnic minorities. The first part of this paper adopts the political process model from social movement theory to study the factors that prompt linguistic minorities to mobilization on ethno-national grounds. Using a large-N statistical model with data drawn from the Minority at Risk database, the results indicate that the higher capacity, the more opportunity for action, and the better the issue is framed, the more likely linguistic minorities would mobilize. Applying these findings, a most similar system design is used in the second part of the paper to compare the Uzbek minorities in Central Asia and the Uyghur minorities in China. The study shows that population density and distribution, the existence of a titular state, and the formation of cultural identity are the key factors that had influenced their decisions of mobilizing or not.

Oral Presentation O1.3

## **MIGRATION AND THE NATURE OF THE RUSSIAN STATE**

Lina Meilus and William Munro\*

International Studies Program, Illinois Wesleyan University

The goal of this paper is to analyze Russian migration policy in order to understand why migration policy in post-soviet Russia has become inconsistent and ineffective. The problems of Russian migration are significant because they affect the estimated ten million labor migrants currently working in the Russian Federation who suffer from human rights abuses. Migration policy is also significant because the Russian Federation is the main receiver of labor exported from Central Asian states and without a consistent migration policy Russia risks endangering the social and political stability of Central Asia. By combining an analysis of migration policy with research on the nature of the Russian state and a comparative migration analysis, it becomes clear that Russia is still in a state of transition from the Soviet Union. The problems of a transitioning state, such as a lack of state capacity, institutionalization of informal practices and a lack of trust in state institutions, combine with an overarching lack of national identity to prevent effective policy from being realized.

Oral Presentation O1.4

**NOT SO DOUBTFUL:  
TRADITIONS OF THE APOSTLE THOMAS FROM THE BEGINNING OF  
THE COMMON ERA THROUGH 600 CE**

Janna Strain and Kevin Sullivan\*  
Religion Department, Illinois Wesleyan University

Historically, Thomas has a rich identity. Much of the apocrypha was named for the “doubting” disciple, such as *The Infancy Gospel of Thomas*, *The Book of Thomas the Contender*, *The Acts of the Apostle Thomas*, and *The Gospel of Thomas*, yet these traditions do not address Thomas’s doubting story from *The Gospel of John*. In fact, Thomas becomes the favored disciple in *The Book of Thomas the Contender* and logion 13 of *The Gospel of Thomas*. In *The Acts of the Apostle Thomas* the disciple leaves Rome to evangelize in India where he is eventually martyred. Today, he is still revered in South India as the messenger that brought Christianity to the country and pilgrims travel to his tomb in Mylapore. These traditions portray Thomas as anything but doubtful.

With the discovery of *The Gospel of Thomas* and *The Book of Thomas the Contender* in the Nag Hammadi library, scholarship on Thomasine traditions in early Christianity has increased, but scholarship of the Mediterranean and India have remained relatively isolated. This paper seeks to discuss the earlier history of Thomas as a religious icon, from its initial appearances in the first century through its earlier developments in India, and evince not only the historical progression linking those traditions, but also the thematic development across time and regions.

Oral Presentation O2.1

## **SEASONAL TRENDS IN LAKE COUNTY SALES TAX**

Barbara Skrobacz and Diego Mendez-Carbajo\*  
Economics Department, Illinois Wesleyan University

This paper studies Lake County, Illinois's sales tax receipts that were collected by the Illinois Department of Revenue. The data sample is collected monthly from July 2004 to December 2012, with 102 observations. This study fits an ARMA (p,q) model to the data in order to conduct short term forecasting for the series. Preliminary analysis shows the presence of 3 trends, the first one being positive from the beginning of the data set to February 2007, the second inflection point occurs until May 2005, and the final trend is positive again. In addition, the data also demonstrates the presence of seasonal patterns that occur annually in March. I used the ADF and KPSS test to identify the order of integration of the data set. The number of times a series needs to be differentiated is used to find the order of integration, used to determine an effective OLS regression. After calculating this, I have determined that the series has an order of integration of  $I(1)$ .



Oral Presentation O2.2

**A TIME-SERIES ANALYSIS OF THE SALES TAX IN  
TAZEWELL COUNTY, ILLINOIS**

Benjamin Aberle and Diego Mendez-Carbajo\*  
Economics Department, Illinois Wesleyan University

This paper studies the sales tax receipts collected for Tazewell County, Illinois. The data series contains 102 observations between July 2004 and December 2012. This study fits an ARMA (p,q) model to the data in order to conduct short-term forecasting of the series. Within an overall positive trend for the whole sample period a cyclical contraction followed by an expansion, corresponding to the 2008-2009 recession, are identified. Recurring seasonal patterns are also apparent, pointing to the month of March as the month with highest sales tax receipts being collected in March. A complete economic cycle of the data series can be observed over the time period including the recession of 2008-2009. The series was determined to be integrated of order one by conducting ADF and KPSS tests.

Oral Presentation O2.3

## **TIME SERIES ANALYSIS OF MCLEAN COUNTY SALES TAX**

Matthew Bishop and Diego Mendez-Carbajo\*  
Economics Department, Illinois Wesleyan University

This paper studies sales tax receipts collected by the Illinois Department of Revenue for Mclean County, Illinois. The data sample contains 102 monthly observations spanning between July 2004 and December 2012. This study fits an ARMA (p,q) model to the data in order to conduct short-term forecasting of the series. We can distinguish between three short-term trends in the data: Increasing until November 2006, decreasing until August 2011, and sharply increasing until December 2012. Seasonal patterns in the data are made manifest through monthly averages showing us that the month of March yields the highest sales tax receipts. By running KPSS and ADF diagnostic tests we conclude that the series is integrated of order one, or I(1).

Oral Presentation O2.4

**TIME SERIES ANALYSIS OF SALES TAX RECEIPTS IN  
COOK COUNTY, ILLINOIS SINCE 2004**

Walker Ambrose and Diego Mendez-Carbajo\*  
Economics Department, Illinois Wesleyan University

This paper studies sales tax receipts collected by the Illinois Department of Revenue for Cook County. The data sample is gathered monthly from July 2004 through December 2012, with a total of 102 observations. This study fits an ARMA (p,q) model to the data in order to conduct a short-term forecast of the series. We have identified two trends in the data: a slightly positive one until October 2008 and a negative trend from then on. We also observe a complete cycle in the series, possibly capturing the 2008-2009 recession. Finally, there is a seasonal pattern in the data with the highest sales tax receipts registered in March. We compute ADF and KPSS tests to determine the order of integration of the series and conclude that the series is integrated of order one, i.e.  $I(1)$ .

Oral Presentation O3.1

## **POETRY SEMINAR**

Theresa Ward and Michael Theune\*

English Department, Illinois Wesleyan University

This poetry project will consist of writing one poem every day for twenty-one days. The poems must be over one-hundred words and use various forms of creativity. The objective of this project is to expand creativity to discover wild writing and new talents. Some poems will have drafts of pre-writing with image gathering, observations of everyday life, series of questions, and specific poem formats. After writing this series of poems, the works will be sorted by how much revision is needed. Selected poems will be divided into different formats of revision to create negative forms of the poem, cut and pasted poems, and poems that are completely rewritten from certain lines. Final versions of some poems will be selected for publication.

Oral Presentation O3.2

## **POEM A DAY**

Sarah Boyle and Michael Theune\*

English Department, Illinois Wesleyan University

I have been conducting a poem a day project throughout this semester. The first project lasted three weeks, the second project lasted four weeks. I took time out of my day, every day, to write a poem. The theme of my second project is people and places around Bloomington. I work in a low-income housing unit here in town. Many of my clients were born and raised in the Bloomington-Normal area. I decided to take advantage of that fact by surveying my clients. I asked them where their favorite, little-known spots in town are. Then, I began to visit these spots and write poems inspired by the locations or the history of the locations.

Oral Presentation O3.3

## **POETRY DAILY**

Colleen O'Connor and Michael Theune\*  
English Department, Illinois Wesleyan University

This semester, I engaged in an extended writing project during which I wrote one poem every day for twenty-one days. During those three weeks, interactions between the obligations of daily life and imaginative play sprouted into an anthology which surprises, intrigues, and reveals themes in both my literary tendencies and my personal life.

During this presentation, I would like to read excerpts from the collection of work which I produced, edited, and finalized during this project. In addition to performing the poems, I would like to discuss the ways in which regular engagement with writing can not only bolster linguistic ability, but also strengthen personal introspective skills, act as a journalistic technique, and reduce anxiety regarding writing.

Oral Presentation O3.4

## **POETRY DAILY**

Kevin Carey and Michael Theune\*  
English Department, Illinois Wesleyan University

During the past semester, in English 301: Poetry Daily, our class has been undergoing a different type of poetry process that has yet to be done in the class format at Illinois Wesleyan University. During this class we have been exploring the idea of writing a poem a day through examples of authors who have been engaging this process and in our own writing. I would like to be able to present some of the my poetry that we worked on the beginning of the class that explores different themes, styles, and forms. It would give some light to the idea that poem a day projects can work to produce exciting, lively poetry. I have six revised poems and would be discussing my process throughout the entire three-week journey and what I have learned from such an insightful process.

Oral Presentation O3.5

## **THOSE WHO TRESPASS**

Emily Susina and Michael Theune\*

English Department, Illinois Wesleyan University

*Those Who Trespass* is a collection of poetry that is centered around a period of my life during which my family and I had to come to terms with one member's suicide attempt and subsequent depression and struggles with addiction and that begins to explore the effects that the events of that period has had on my understanding of myself. The poems tell my side of the story, address the conflicted feelings I had toward the members of my family, and show the way the things I experienced during that time have influenced the types of choices I make and the way I interact with others. In the preface to this collection, I discuss the ways in which I have been able to use poetry as a coping mechanism and as a emotional outlet, and I explore how the act of telling stories in this way has helped me to understand my own identity and the ways in which my worldview is informed by my past experiences. The collection gives voice to a topic that I have felt unable to address previously, and it reveals the way poetry can be used to come to terms with one's own past and to begin to look at how that past shapes and informs future experiences.



Oral Presentation O4.1

## **STARTING THE SWITCH: ILLINOIS WESLEYAN'S MOVEMENT TOWARDS CLEANER TRANSPORTATION**

Tara Gracer and Abigail Jahiel\*

Environmental Studies Program, Illinois Wesleyan University

Illinois Wesleyan University had a carbon footprint of 129 metric tons in the 2011 to 2012 school year for its thirty-three-vehicle fleet. This study addresses the feasibility of Illinois Wesleyan adopting new policies to reduce its fleet carbon emissions and whether or not Illinois Wesleyan can transition to alternative fuel vehicles. A general overview of transportation benefits, costs, and policies in the United States is explained and is presented along with what other schools similar to Illinois Wesleyan's scale have done. The research design and methodologies include archival research of gasoline usage, a survey of fleet users, and interviews with department heads and individual users. The most significant research findings were determined through interviews, which showed support from all departments and individuals for transitioning to alternative fuel vehicles and determined several possible policies that are Illinois Wesleyan specific. Policy implications range from implementing an anti-idling policy to generating biodiesel fuel from campus wastes.

However, the feasibility of Illinois Wesleyan transitioning its fleet to alternative fuel vehicles is not possible due to the current university budget constraints.

Oral Presentation O4.2

**FORCED MIGRATION AND ACCUMULATION BY DISPOSSESSION:  
A SUGGESTED MODEL FOR UNDERSTANDING  
MEXICAN IMMIGRATION**

Alejandro Monzon and Meghan Burke\*

Sociology and Anthropology Department, Illinois Wesleyan University

This study on Mexican immigration is two-fold. On the one hand, I will delineate how the logic of capital accumulation, particularly accumulation by dispossession, forces Mexicans to migrate to the United States. As a nuanced contribution to World Systems analysis of migration, I will highlight three Marxian concepts that dialectically constitute forced migration: 'expanded reproduction', the 'global reserve army' and 'accumulation by dispossession.' In today's neoliberal era, 'accumulation by dispossession' proves to be a decisive aspect of capital accumulation. On the other hand, I will highlight specific aspects of the experiences of Mexican immigrants living in the Bloomington-Normal area in order to expose first hand the injustices of forced migration. In my conclusion, I will emphasize not only that migration is a human right, but also that there should be a right *not* to migrate: that is, development on people's own terms is the necessary prescription to cease forced migration. Accordingly, I will bring attention to what migrants themselves affirm regarding what is to be done.

Oral Presentation O4.3

**HUMAN PILLARS AND HUNGRY BRIDGES:  
AN ETHNOLOGICAL STUDY OF CONSTRUCTION SACRIFICE**

Robert Diehl and Charles Springwood\*  
Sociology and Anthropology, Illinois Wesleyan University

The practice of construction sacrifice (also called *building sacrifice* or *foundation sacrifice*), which entails burying an animal, object, or person inside a building under construction, exists in multiple traditions around the world, from Japan to Northern Europe, and is described in Slavic folk songs as well as early American folklore. The motivation for these sacrifices can broadly be divided into two categories: appeasement sacrifice, in which the sacrifice fulfills some need and allows the building to stand, and protective sacrifices, which protects the building from future damage. To date, there has been no overarching ethnological study conducted to try and draw together instances of this motif. This paper draws on archaeology, folklore studies, and the anthropology of constructed spaces to discern commonalities in these beliefs and perhaps hint at their origins.

Oral Presentation O5.1

## **VESTAL VIRGINS OF ROME: IMAGES OF POWER**

Melissa Huang and Amanda Coles\*

Greek and Roman Studies Program, Illinois Wesleyan University

From humble beginnings, the Vestal Virgins were able to create a foothold in political life through the turbulence of the transition from Republic to Principate. In part due to the violent and perilous transition, the Vestal Virgins of Rome began to represent a sense of what it meant to be Roman. The manifestation of the symbolization of Rome gave the Vestals great power, which they expressed in political and social venues. In order to describe these expressions, this presentation explains the religious and social roles of the Vestals established before the Late Republic. This is necessary because most of the evidence is focused around the turn of the millennium, and concrete evidence for earlier Vestals is rare. Yet, a discussion of the traditions that were accepted as ancient is still necessary to establish the social expectations for the Vestals up until the Late Republic. The second phase details how the transitions from Republic to Principate resulted in a change in social and political roles for Vestals. The Vestal Virgins were originally placed in a liminal status set between the state and individual families. The third and final part demonstrates that the powers that the Vestals gained, and were perceived to have gained, were dependent upon the social consciousness of contemporary Rome. By placing these power dynamics in the context of a Roman consciousness, I show that Vestals gained power by virtue of their unique social and political positions.

Oral Presentation O5.2

**ANALYSIS OF STIEG LARSSON'S POLITICAL PORTRAYAL OF  
MISOGYNY, RACISM, AND ECONOMIC CORRUPTION IN SWEDEN  
THROUGH *THE GIRL WITH THE DRAGON TATTOO***

Karen Jaslow and Adam Woodis\*

Modern and Classical Languages and Literatures, Illinois Wesleyan University

Stieg Larsson's political and moral views inspired and shaped his detective fiction writing career and the best-known work of his *Millennium Trilogy*, *The Girl with the Dragon Tattoo*. He used this novel as a tool to bring awareness to racism, economic corruption, and misogyny in Sweden, a country many people view as a sunny place full of blonde supermodels. Larsson challenges this idealistic image by highlighting the harsh reality of Sweden's staggeringly high sexual abuse rates along with fact that Nazi parties were prominent in Sweden during WWII. He brings awareness to misogyny in Sweden both in *The Girl with the Dragon Tattoo*'s plot—a strong female character and a sympathetic detective try to catch a sadistic killer of women—and by listing shocking statistics of sexual assault in Sweden at the beginning of each section of the book. Lastly, through subplots and backstory, Larsson delineates his views of Sweden's corrupt economic system and its seldom acknowledged Nazi history.

Oral Presentation O5.3

## **FRAMING SNOW WHITE: CONTEMPORARY USE (AND ABUSE) OF CLASSICAL FAIRY TALES**

Emily Susin and Marina Balina\*

Literature and Culture Studies in English Translation, Illinois Wesleyan University

Contemporary American fairy tale scholar Jack Zipes illustrates the influence of societal norms upon the creative mind, asserting, "we reproduce images consciously and unconsciously that are not of our own making." The character of Snow White is one such image that continues to reappear in literature and in different media venues. In both folklore and literary fairy tales, Snow White was quite often locked into a frame of domesticity, reflecting the traditional role society defined for women. In contemporary media, Snow White is presented as a warrior who embraces her masculine side. While this shift from housewife to warrior illustrates modern desire to empower women, the result is yet another frame for this female character. Therefore, in her long life in literature and on screen, Snow White serves as an example of women's subordination to the ever changing societal demands.

Oral Presentation O5.4

**INTERPRETING SACRED TEXT: IS JOE WRIGHT'S FILM  
ADAPTATION OF ANNA KARENINA COMPELLING OR CRIMINAL?**

Samantha Reiter and Marina Balina \*

Literature and Culture Studies in English Translation, Illinois Wesleyan University

When canonical literary works are adapted to the screen, there is often skepticism about whether or not the film version maintains the integrity of the original text. Skepticism is, however, the mildest of reactions amongst Russians' recent outrage for Joe Wright's 2012 Motion Picture adaptation of *Anna Karenina*. Often recognized as one of Tolstoy's most beloved and compelling novels, *Anna Karenina* is also revered as a national treasure in its homeland. The film, with a screenplay adapted, directed and performed by British artists, incited fury not only for its liberating stylistic choices, but also simply for failing to appreciate Russia's national spirit. Does this indicate that Putin's Russia is returning to the same nationalist mentality of the Soviet era? Should other nations then be barred from showcasing and exploring another country's art across different mediums? Are film interpretations even capable of maintaining the integrity of literary classics?

Oral Presentation O6.1

## **WHAT CAUSES BANK FAILURES DURING THE RECENT ECONOMIC RECESSION?**

Qingyu Li and Jeungbo Shim\*

Business Administration Department, Illinois Wesleyan University

More than 400 banks failed during the recent financial crisis. Bank failures have a significant impact on the financial system and the economy as a whole. It is important to identify factors that may contribute to bank failures so that banks can take measures to reduce their default risk. This paper examines how bank specific characteristics and economic conditions affect bank failures during the recent financial crisis. We employ the logistic regression model to study this issue using the U. S. commercial bank data over the sample period 2007-2012. We find that the ratio of the loan and leases to total assets, real estate loan ratio, and non-performing loan ratio have a positive influence on the bank failures while capital adequacy ratios, return on assets, liquid ratio, and GDP growth rate have a negative impact on bank failures.



Oral Presentation O6.2

**LOBBYING ON DEFENSE AEROSPACE:  
WHAT FACTORS IMPACT IT AND WHY**

Austin Smiley and Elisabeta Pana\*

Business Administration Department, Illinois Wesleyan University

The purpose of this research paper is to analyze what factors affect the lobbying engaged in by the major players in the aerospace defense industry. The study focuses on several important accounting measures specific to each company. It also takes into account both government and public variables including the level of public scrutiny the company experiences, their credit rating, and national defense spending. The study is expected to support the positive correlation between a strong financial position and higher lobbying activity. It is also expected that this analysis will show positive correlations between the level of lobbying and the government and public variables.

Oral Presentation O6.3

## **SOMEWHERE OVER THE RAINBOW...THERE'S THE REAL BLOOMINGTON**

Raven Stubbs and Dani Snyder\*

School of Theatre Arts, Illinois Wesleyan University

Bloomington has a very nostalgic, dream like feeling to it according to the common IWU student's impression, myself included. It wasn't until I became heavily involved in volunteer work thorough the Summer Enrichment Program (SEP) that I realized that Bloomington is not the affluent IWU bubble and Veterans Parkway shopping utopia that we usually have in our minds. Bloomington is a community that isn't drench in affluence, as we perceive it to be, because right east of Market St. is a majorative population of low-income, underrepresented minorities. I set out to discover what the community of Bloomington truly is at its core, what problems lie within this community where students spend four essential years of their lives, and why those problems exist.

I used a sociological qualitative and an ethnodrama research method in interviewing several members of the Bloomington community: students, faculty, not-for-profit organization leaders, and long-time residents. The result became a docudrama play in which I attempt to paint a realistic picture of the community we live in.

Oral Presentation O7.1

**CAN TRAFFIC REDUCE CRIME RATES: A CASE STUDY OF GENTRIFICATION  
AND GRANGER-CAUSALITY IN WASHINGTON, D.C.**

Will Lawrence and Robert Leekley\*  
Economics Department, Illinois Wesleyan University

This study looks at the causal forces behind the social relocation phenomenon known as gentrification. Location theory posits that ever increasing commute times coupled with falling crime rates incentivize the high-income population to move from the suburbs to the city. The high-income population demands real estate in the city, which drives up housing prices and displaces the low-income residents who already live in the city-center. This study applies location theory to Washington, D.C. in an attempt to explain the gentrification process that is underway. Long-term, city-wide commute and crime data are analyzed to explore the relationship travel costs have on gentrification. A Granger-causality test is then employed to look at the causal relationship between crime rates in the city and the gentrification process in individual police service areas.

Oral Presentation O7.2

**TRANSMITTING OCCUPATIONAL NICHEs FROM FIRST TO SECOND  
GENERATION IMMIGRANTS: ARE THERE EARNINGS  
CONSEQUENCES FROM BEING THE “COPYCAT” GENERATION?**

Melissa Seeborg and Craig Broadbent\*  
Economics Department, Illinois Wesleyan University

In recent years, the number of second generation immigrants entering the labor market has been increasing at a rapid pace. Their parents had immigrated in large waves, with many joining niche occupations dominated by their ethnic groups. This study looks to determine the economic impact of niche occupations, the extent that the second generation enters the same occupations, and how these factors impact the second generation's income levels. In particular, the study investigates whether the second generation will sustain the earnings advantage (or disadvantage) relative to first generation immigrants and natives. This research examines immigrants from China, India, the Philippines, Mexico, and Puerto Rico. Data from the Current Population Survey is empirically tested through two separate OLS regressions. Results differ between countries, but imply no exact set of occupations transmitted across generations. There is some evidence of the continuation of income advantage (or disadvantage) across ethnic groups.

Oral Presentation O7.3

## **ASSESSING HAPPINESS: HOW ECONOMIC FACTORS MEASURE UP**

Elizabeth Hancock and Michael Seeborg\*  
Economics Department, Illinois Wesleyan University

This study examines the influences on subjective well-being in the context of the emerging field of happiness economics. The field developed when economists observed that increases in per-capita income had minimal effects on the average happiness levels of a country. Applying this phenomenon to microeconomic theory challenges the neoclassical premise that an increase in income and consumption should increase happiness. The simplicity of the neoclassical theory neglects other important influences on happiness like social comparison and non-pecuniary factors. Using multinomial logistic regressions with data from the General Social Survey, this study evaluates the statistical significance of both economic and non-pecuniary variables on happiness. Empirical results demonstrate that an increase in social position is statistically significant when estimating happiness levels. The relationship found between social comparison and happiness indicates that the traditional neoclassical model may not provide an accurate description of the determinants of happiness.

Oral Presentation O7.4

## **THE EFFECTS OF TEMPORARY IMMIGRANT LABOR**

Katelyn Rowley and Michael Seeborg\*  
Economics Department, Illinois Wesleyan University

An important recent labor market trend is the rapid increase in the number of immigrants employed in the information technology sector who have temporary worker status. Economic theory suggests that temporary immigrant workers will be affected more adversely than native workers during a recession. This study uses OLS regression models to predict both wages and employment levels (through usual hours worked) in IT occupations as a function of immigration status, education level, age, gender, the recession and a set of interactive terms. The results from this study unexpectedly show that in the IT sector, employment of native workers fell during the recession while the employment of temporary immigrant workers rose. Also surprising is that wages of temporary immigrant workers in the IT sector do not appear to be significantly different from wages of natives in that sector even during the recession. This suggests that employers retained temporary workers and even added to their employment to maximize productivity and fill a skills gap in the IT sector, rather than realize alternative benefits of retaining native workers in long term positions.

Oral Presentation O8.1

## **ELITIST SCHEMA OVERLAYS: A MULTI-PARENT GENETIC OPERATOR**

Nick Nichols and Mark Liffiton\*

Computer Science Department, Illinois Wesleyan University

Genetic Algorithms are programs inspired by natural evolution used to solve difficult problems in Mathematics and Computer Science. The theoretical foundations of Genetic Algorithms, the schema theorem and the building-block hypothesis, state that the success of Genetic Algorithms stems from the propagation of fit genetic subsequences. Multi-parent operators were shown to increase the performance of Genetic Algorithms by increasing the disruptivity of genetic operations. Disruptive genetic operators help prevent suboptimal genetic sequences from propagating into future generations, which leads to an improved fitness for the population over time. In this paper we explore the use of a novel multi-parent genetic operator, the *elitist schema overlay*, which propagates the matching segments in the genetic sequences of the elite subpopulation to bias the global search towards the best known solutions. We investigate the parameters that drive the behavior of elitist schema overlays to determine the most successful model, and we compare this to successful multi-parent and traditional genetic operators from the literature.

Oral Presentation O8.2

## **ANALYZING AND EXTENDING AN INFEASIBILITY ANALYSIS ALGORITHM**

Ammar Malik and Mark Liffiton\*

Computer Science Department, Illinois Wesleyan University

Constraint satisfaction problems (CSPs) comprise of finding assignments to a set of variables that satisfy some mathematical constraints. Unsatisfiable constraint problems are CSPs with no solution. However, useful characteristic subsets of the problem may be extracted with algorithms such as the MARCO algorithm, which outperforms the best known algorithms in the literature. A heuristic choice in the algorithm affects how it traverses the search space to output these subsets. The effect of this choice on the performance of the algorithm is analyzed. In addition, three different improvements to the algorithm are proposed: the first of these improvements sacrifices completeness in terms of one type of subset in order to improve the output rate of another; The second and third are variations of a local search in between iterations of the algorithm which result in improved guidance in the search space. The performance of these improvements is analyzed both individually and in combinations across a variety of benchmarks and they are shown to improve the output rate of MARCO.



Oral Presentation O8.3

## **THE COEFFICIENT CHARACTERIZATION OF POLYNOMIALS WITH GOLDEN RATIO ROOTS**

Kurt VanNess and Tian-Xiao He\*<sup>1</sup> and Jack Maier<sup>2</sup>  
Mathematics Department<sup>1</sup>, Illinois Wesleyan University  
University of Utah<sup>2</sup>

The golden ratio and the Fibonacci numbers have a very noticeable presence in many mathematical applications. They are intricately connected in many explorations that involve the optimization of every-day systems (both natural and man-made). With such a prominent existence, it is helpful to discover ways to characterize the polynomial models that have the golden ratio and its conjugate as roots. As it turns out, these polynomials can be completely characterized by the constant and linear terms of the polynomial, which are both functions of the Fibonacci and Lucas numbers. These polynomials can then be used to derive many new and well-known identities of Fibonacci and Lucas numbers as well as the golden ratio.

Oral Presentation O9.1

**LA BLANCA MANO: UN PARALELO ENTRE CERVANTES Y LA  
GENERACIÓN 1,5  
(THE WHITE HAND: A PARALLEL BETWEEN CERVANTES  
AND THE 1.5 GENERATION)**

Sylvia Rusin and Carolyn Nadeau\*  
Hispanic Studies Department, Illinois Wesleyan University

The experiences of the captive, Ruy Perez de Viedma, in the novel, “El ingenioso hidalgo Don Quijote de la Mancha,” have similar developmental, psychosocial and structural implications to the experiences of the 1.5 generation. The 1.5 generation are the undocumented students who were born abroad and were brought to the United States by their parents at an early age. Many of these children came here during the population boom in the 1990’s and are now teenagers or in their mid 20’s. The majority are unaware of their undocumented status until they enter high school. As they discover their barriers, they experience a range of psychosocial issues as well as begin fighting to regain their lost liberty. In the same way, the captive, Ruy Perez de Viedma, also fights for his lost liberty and experiences similar effects as the 1.5 generation in his journey. This project is Sylvia Rusin’s Hispanic Studies senior seminar research paper.  
(In Spanish)

Oral Presentation O9.2

**ESPAÑOL: *RUGRATS* Y *DON QUIJOTE DE LA MANCHA*: LA  
PERSPECTIVA DEL NIÑO**

**ENGLISH: *RUGRATS* AND *DON QUIXOTE DE LA MANCHA*: A CHILD'S  
PERSPECTIVE**

Kylene Wolfe and Carolyn Nadeau\*  
Hispanic Studies Department, Illinois Wesleyan University

When reviewing Cervante's famous novel, *Don Quijote de la Mancha*, many readers try to attribute Don Quixote's deviance and perspective on reality to madness. However, when examining Don Quixote's reality in comparison to the imaginative world that is the reality of a child, many similarities can be seen. This presentation explores a post-modern children's show, *Rugrats*, to show how these two realities not only exist in the novel, but in the post-modern world as well. The presentation also uses the developmental changes in the brain that occur between childhood and adulthood in order to explain the differences in perspective that exist between Don Quixote and his beloved squire, Sancho Panza. The hope is that by using scenes from Nickelodeon's *Rugrats*, readers will come to appreciate and understand Don Quixote as a creative genius, free of limitations that bind others to the narrow-minded perspective that is exhibited by Sancho Panza and adults in general. (In Spanish)

Oral Presentation O9.3

***DON QUIXOTE THROUGH THE FREIREAN LENS***  
***(DON QUIJOTE A TRAVÉS DEL LENTE FREIREANO)***

Alejandro Monzon and Carolyn Nadeau\*  
Hispanic Studies Department, Illinois Wesleyan University

Paulo Freire's philosophy of liberation is prominent in studies of pedagogy, but is seldom employed to understand dynamic interactions in works of literature. Freire's seminal work, *Pedagogy of the Oppressed*, outlines several concepts of liberation that can be utilized to understand the character Don Quixote and his adventures with others in Cervantes' classic novel. As a knight-errant seeking to help the oppressed, Don Quixote is undermined by his "false generosity" when attempting to help an oppressed peasant, Andrés; the oppressed women Marcela and Dorotea fail to liberate themselves due to a lack of solidarity and fear of freedom (respectively); and Don Quixote is driven to action by his utopian views evidenced by his speeches on the "Golden Age" and "Arms and Letters", which Freire helps to explain with his concepts of praxis and utopia. Seen through a Freirean lens, it becomes obvious why *Don Quixote* is a novel that transcends its historical circumstances and influences those fighting for justice in today's world.

(Presentation in Spanish)

Oral Presentation O10.1

***Autobiographical Voice and Resistance in Maryse Condé's Le cœur à rire et à pleurer :  
Dynamics of Race, Gender, and Écriture Féminine***

Maria Klingele and Scott Sheridan\*

French and Francophone Studies, Illinois Wesleyan University

As a collection of autobiographical short stories or vignettes, *Le cœur à rire et à pleurer* (*Tales From the Heart: True Stories From my Childhood*, 1999) represents Guadeloupean author Maryse Condé's (1937 - ) interaction with and dismissal of multiple forms of oppression. As Condé makes use of storytelling and her childhood memories to explore issues of her identity and societal role, her writing transforms into a self-declaration of social change and equality. This paper aims to identify and examine Condé's denial of constructs of Otherness, in her persistent effort to resist the cycle of oppression and to dismiss the generational pressures to conform to patriarchal and colonial values. Informed by psychoanalytic theory and feminist criticism, Condé adapts her own *écriture féminine* (women's writing) to assert the significance of women's voices as tools in breaking the silence of abjection and dismantling hierarchical notions of power.

Oral Presentation O10.2

**FOOD IN REVOLUTIONARY FRANCE:  
BOURGEOIS CONSUMPTION AND THE EVOLUTION OF CUISINE**

Timothy Reardanz and Scott Sheridan\*

French and Francophone Studies, Illinois Wesleyan University

As France approached its revolution of 1789, societal dynamics changed dramatically as the burgeoning bourgeoisie gradually replaced the aristocracy and nobility in the political, economic, and cultural hierarchy. One aspect of French culture that saw immediate change due to this shift in power was food. Many factors affected the continued development of the modern restaurant, including a new availability of chefs: cooks who had previously been employed privately by aristocrats and nobles now integrated themselves into the new culinary culture and public dining. Another notable factor resulted from modified taste preferences and different models of consumption due to the change in clientele. This presentation will analyze the complex evolution of cuisine during the French Revolution and through the early years of the Bourbon Restoration, including the role of social perceptions of the public dining experience in the creation of the modern restaurant.

Oral Presentation O10.3

## **THE TEST OF TIME**

Whitney Wilkerson and Christopher Callahan\*  
French Department, Illinois Wesleyan University

The practice of translation is perhaps one of the often overlooked arts to which we owe much of our knowledge of history, literature, and indeed the spread of some of the greatest intellectual cornerstones of the modern world. And, behind it all, the unsung hero: the translator. Literature's multilingual mouthpiece. Yet, for all its good intentions, it is a profession plagued with the infamous "*Traduttore, traditore*" – "Translator, traitor." Studies in translation theory have divided translators and translation theorists into debates over the "better" approach to translation practice or indeed, whether to translate at all. Texts of the medieval period pose an interesting task for the translator of any theoretical persuasion. One must consider spanning not only cultural-linguistic boundaries, but also a considerable temporal gap. Thankfully, some have braved the task and carried these texts to our American, 21<sup>st</sup> century bookshelves. But each passing decade poses new threats of extinction. This study examines a new approach to preserving these historical masterpieces, aimed at not only transmitting the historical intrigue of centuries ago to a modern audience, but also bringing new life to works by making them accessible to more than the doctoral medievalist – and hopefully, keeping them around for a few more centuries to come.

Oral Presentation O11.1

**TRANSFORMING THE FARM BILL:  
THE LOCAL FOOD MOVEMENT AND POLITICAL CHANGE**

Daniel Kenny and James Simeone\*  
Environmental Studies Program, Illinois Wesleyan University

Given the fairly rapid rise to prominence of local food, it is important to measure its success as a social movement to assess the nature and extent of its transformative capacity in the political realm. Academics have already recognized local food utilizing New Social Movement (NSM) theory. However, this paper draws from Political Process theory to assess the impact of the local food movement on national food and farm policy, as measured by changes in the 2008 Farm Bill to the 2012 bills proposed by the House and Senate for a new Farm Bill. Support for conventional agriculture has traditionally outweighed the programs encouraging local food, presenting a significant policy challenge that has restrained the local food movement. Through an analysis of policies and spending within the Farm Bill, this study determines if local food has yet to challenge the dominance of industrial farming within our national agricultural paradigm.



Oral Presentation O11.2

**ASSESSMENT OF THE UNDERREPRESENTATION OF WOMEN IN  
AGRICULTURAL OCCUPATIONS AND THE MOTIVES FOR  
MOVEMENT INTO THE PROFESSION**

Jennifer Long and Meghan Burke\*

Sociology and Anthropology Department, Illinois Wesleyan University

In the United States, agriculture has been a male-dominated industry. Women have been underrepresented in agricultural occupations even as they have played important roles on and off the farm. In the last 25 years, however, women in principal operating roles have doubled and 30% of farm operators are women. Described as “socially disadvantaged farmers” by the USDA, today, women are increasingly moving into agricultural occupations. Women typically operate smaller farms and tend to diversify the types of farms they operate and their visibility in off-farm positions is increasing. Simultaneously, the industry is undergoing structural changes, as a result of large commercial farms gaining representation in the industry and smaller family farms becoming a less viable occupation. In lieu of these realities, women are still moving into the industry and motives for this move can help gather information on the changing role of women in agriculture and whether agricultural trends follow other occupational trends. An in-depth literature review and 16 in-depth interviews were conducted in the Midwest region of the United States to understand the role of women in agriculture and motives for women moving into the industry. This presentation will include results and discussion from the research.

Oral Presentation O11.3

## **GLEANNING FRESH PRODUCE TO ‘WATER’ A FOOD DESERT**

Rachel Casali and Abigail Jahiel\*

Environmental Studies Program, Illinois Wesleyan University

West Bloomington, Illinois is considered a food desert by the United States Department of Agriculture. Food deserts are a rising problem as chain grocery stores increasingly move outside of inner cities forcing these residents to make food purchases at smaller stores where prices are higher, quality is lower, and fresh produce is limited (Hendrickson et al. 2006, Walker et al. 2010, Wrigley et al. 2002). This study examined how West Bloomington can utilize its proximity to Central Illinois farms to aid in overcoming the impacts of a food desert. Through surveying West Bloomington residents and local farmers, in addition to interviewing others interested in food justice, solutions to food deserts were found to be multifaceted, and, gleaning at the Bloomington Farmers’ Market (collecting leftover produce), in conjunction with a mobile grocery store, were identified as feasible means to provide West Bloomington residents access to low-cost produce. Through these solutions, issues of access to produce, affordability of produce and interest in produce can be better addressed so as to provide ‘water’ to the West Bloomington food desert.

Oral Presentation O12.1

## **SEXUAL PROWESS: THE SOCIAL IMPORTANCE OF HETAIRA IN CLASSICAL ATHENS**

*“One maintains a hetaira not only for pleasure, as a mistress, but also for the daily care and service of one’s person.”* —Demosthenes, Speech against Neaira

Olivia Dunham and Nancy Sultan\*  
Greek and Roman Studies Program, Illinois Wesleyan University

Long thought to be simply prostitutes, *hetaira* were actually very educated and, more often than not, wealthier women who were very shrewd in business as well as sexual activities. This paper will examine the social importance of *hetairai* in Classical Athens through archaeological evidence. The evidence that will be used will be predominantly red-figure pottery, but also some archeological sites in Athens will be examined. The moral opinion of prostitution in general will be discussed in conjunction with the success of the brothels located in Classical Athens. Along with the discussion of moral opinion, a brief overview will be made of the vocabulary used in Ancient Greek connotations when describing prostitutes and brothels.

Oral Presentation O12.2

## **COLONIA CLAUDIA ARA AGRIPPINENSIIUM**

Kenneth Suevel and Amanda Coles\*

Greek and Roman Studies Program, Illinois Wesleyan University

The colony Colonia Claudia ara Agrippinensium, located in modern day Köln, was a major center for control of Germania Minor during the Roman Empire and a very strong military base. It was founded in 30 BCE by the Ubii, a Gaulic tribe, for their loyalty to the Romans during the Gaulic Wars of Caesar. I am planning on examining the interaction of the culture between the soldiers who got stationed there and the locals who originally founded the town. I believe that the interaction was a positive one with little tension and I plan to express this by showing and explaining the mixing of cultures that happened between them. I am examining this through the lens of archeological remains from the city and primary sources text on the region. I want to try to use the techniques Foucault used in *The Order of Things* to interpret the evidence that is left in the region.

Oral Presentation O12.3

**USE AS DIRECTED: WOMEN'S ROLES IN PETRONIUS' *SATYRICON***

Emily Susina and Nancy Sultan\*

Greek and Roman Studies Program, Illinois Wesleyan University

Petronius' *Satyricon*, likely intended for Nero's court in the late first century AD, has long been studied to understand the roles and interaction of freedmen in ancient Rome. There are, however, far fewer attempts to study the way Petronius uses women in the novel. In analyzing the women in the novel in terms of Judith Butler's ideas that sex and gender are constructs and that sexual identity is performative, it becomes evident that Petronius constructs women's personalities differently in the *Cena Trimalchionis* than in the rest of the novel to provide a commentary about the way women actually behaved and the actions of the ideal woman. Comparing Petronius' portrayal of women in the majority of the novel to the freedmen's wives, Fortunata and Scintilla, in the *Cena Trimalchionis* demonstrates that the novel satirizes women in order to show the expected behavior for a proper Roman wife. The women in the *Cena*, whose actions are more in line with those of the ideal Roman woman, are viewed as part of a theatrical performance, while the women outside of the *Cena*, described as more promiscuous, do not act under the same type of direction. Petronius' text, then, can be interpreted in line with Butler's views; that is, the women in the *Satyricon* show that expected gender roles, in ancient Rome, were culturally constructed and performed rather than innate, and the ideal wife must follow the specific direction of her husband's household rather than choosing for herself how to behave.

Oral Presentation O12.4

## **CHILDREN IN GREEK ART: THE EVOLUTION FROM MINI-ADULTS TO REALISTIC DEPICTIONS**

Elizabeth Rubel and Nancy Sultan\*

Greek and Roman Studies, Illinois Wesleyan University

There have been many changes in the conception of what a child is over time. In this paper I argue that the new emphasis of individualization in art during the Hellenistic Period in Greece was the reason why children changed from being depicted as miniaturized adults, like they were in previous periods, to more realistic images of infants. The different stages of development in childhood, from infancy to adolescence, were also established during this time period and are reflected through the images of different activities that the children are involved in.

Oral Presentation O13.1

**DEMOGRAPHIC CHANGES AND ECONOMIC GROWTH:  
EVIDENCE FROM ASIAN COUNTRIES**

Sijia Song and Amit Ghosh\*

Economics Department, Illinois Wesleyan University

Asia has witnessed robust growth since the 1960s and the so-called “East Asian economic miracle”. Even till today when the world’s largest economies are suffering from debt and banking crises, emerging markets in Asia have managed to maintain rapid growth. In the meantime, significant demographic changes are taking place in Asian countries. Although existing studies have found demographic changes and economic growth closely related, such findings are rather inconsistent and a defined relationship cannot be concluded. Using an economic growth model, this article further examines the relationship between demographic changes and economic growth in Asia with data spanning from the 1960s to the first decade of the current century. The results find various extents to which demographic changes have affected the economic growth in the region and their potential impact in the future.

Oral Presentation O13.2

## **EFFECT OF HEALTH INSURANCE TYPE ON QUALITY OF PATIENT CARE**

Aravind Nagavalli and Robert Leekley\*  
Economics Department, Illinois Wesleyan University

This study examined the association between health insurance type and quality of primary care experience, measured by using four quality of primary care indicators. Four survey questions from the Household component of the 2010 Medical Expenditure Panel Survey were used as quality of care indicators. The study was limited to patients who had either public or private insurance and had a Usual Source of Care (USC). Multinomial Logit models were used to determine the effect of health insurance on the quality of care, while controlling for income, gender, and race. The privately insured were more likely to experience a higher level of quality of care based on three of the four indicators. Targeting the inefficiencies in the public healthcare system should be the core of future healthcare policy.



Oral Presentation O13.3

**THE DETERMINANTS OF ECONOMIC GROWTH IN THE  
TRANSITIONAL ECONOMIES OF THE FORMER YUGOSLAVIA**

Tara Gracer and Michael Seeborg\*  
Economics Department, Illinois Wesleyan University

This study examines the unique transitional economies of the former Yugoslavia and their economic growth components relative to the most successful country, Slovenia. Since literature on the former Yugoslavia is still lacking in recent years, this study adds to the understanding of their economic growth after the breakup in 1992. The economic components of growth theory by Smith and Todaro (2012) summarizes the effects of physical capital stock accumulation, population growth, labor force, and technological progress on economic growth. The final findings are that Serbia and Croatia are making significant efforts to be as successful as Slovenia has been in the past and that FDI inflow investments are the most significant components of growth for the former Yugoslavia countries.

Oral Presentation O13.4

**PEORIA COUNTY SALES TAX RECEIPTS:  
IS THE ECONOMY IMPROVING?**

Michael Mayberger and Diego Mendez-Carbajo\*  
Economics Department, Illinois Wesleyan University

This paper studies the sales tax receipts for Peoria County, Illinois to investigate the level of economic recovery since the recession of 2008-2009. Local officials and businesses may find this study relevant for planning and forecasting purposes. We use a time series analysis with a monthly data sample obtained from the Illinois Department of Revenue from June 2004 to December 2012, a total of 102 observations. This study fits an ARMA (p,q) model to the data in order to conduct short-term forecasting of the series. Preliminary analysis shows: the presence of seasonal patterns, the highest sales tax receipts are recorded in March; a cycle capturing the 2008-2009 recession; and an overall slight negative trend. By computing the ADF and KPSS tests, we conclude that the series is integrated of order one (I(1)).

Oral Presentation O14.1

**WHAT UNIVERSITY PERSONNEL SHOULD KNOW:  
STUDENT CAREER CONFIDENCE, HELP-SEEKING STIGMAS,  
AND USE OF CAREER CENTER SERVICES**

Anna Woodruff and Linda Kunce\*  
Psychology Department, Illinois Wesleyan University

Research showed that many career centers are underutilized by students because of unawareness of services or help-seeking stigmas. Further, gender and ethnicity may affect utilization and perceptions. A pair of studies was conducted to investigate student perceptions of college career center services. In the first study, undergraduates completed questionnaires evaluating their awareness and use of career center services, stigma related to career counseling, and career decision self-efficacy. In the second study, students evaluated individual career center counseling and workshops, while identifying any changes in confidence to face future career decisions. The results showed that students rated the career center very highly. However, there were a few significant gender differences, with females offering more approval towards the career center than males. Additionally, students who held higher stigmas of help-seeking were less likely to value career center services.

Oral Presentation O14.2

**ASSESSING UNDERGRADUATE NURSING STUDENTS' KNOWLEDGE,  
ATTITUDES AND CULTURAL COMPETENCE IN CARING FOR  
LESBIAN, GAY, BISEXUAL AND TRANSGENDER PATIENTS**

Kristy Strong and Victoria Folse\*

School of Nursing, Illinois Wesleyan University

Lesbian, gay, bisexual, and transgender (LGBT) patients experience barriers to health care due to fear of discrimination or limited access to providers knowledgeable about the LGBT population. This study examines the effectiveness of an educational intervention conducted at Illinois Wesleyan University that aimed to improve knowledge level and attitudes of nursing students toward LGBT patients. The educational intervention focused on key terminology, health disparities, medical needs of transgender patients and culturally sensitive communication skills necessary for competent LGBT patient care. Knowledge level and attitudes were evaluated before and after the educational intervention using a survey based on the Attitudes Toward Lesbians and Gay Men Scale and a knowledge test developed by the researchers. The results of this study provide direction for future educational programs promoting cultural competence for healthcare providers regarding LGBT patients.

Oral Presentation O14.3

**EXAMINING DISPARITIES IN CARE IN AN UNINSURED,  
DIABETIC POPULATION**

Emily Manninen and Lisabeth Searing\*  
School of Nursing, Illinois Wesleyan University

Diabetes is a common health problem that requires continuing medical care, self-management, and education. However, different populations experience diabetes and diabetes-related care differently. This study examined diabetes care and health outcomes at a Midwest community health clinic serving the uninsured. Data were obtained from medical charts and included demographic information and quality of care indicators. A variety of statistical analyses were used to determine if quality of diabetes care and related health outcomes varied due to age, sex, language, and ethnicity. Implications of the analyses are discussed, including possible interventions to reduce these disparities.

**POSTER SESSION A**

**9:00 - 10:00 a.m.**

Odd-Numbered Posters

**POSTER SESSION B**

**2:00 – 3:00 p.m.**

Even-Numbered Posters

**EDUCATIONAL STUDIES POSTERS - ES**

**9:00 – 10:00 a.m.**

or

**11:00 – 12:00 noon**

Lower Level – Ames Library

Note: Student's name is underlined, faculty advisor designated with \*

During each poster session the author will be present to discuss her or his research with conference attendees, and answer questions.

Please remove your posters from CNS Atrium by 3:30 p.m.

Poster Presentation P2

**ISOLATION AND CHARACTERIZATION OF NOVEL  
MYCOBACTERIOPHAGES FROM THE CENTRAL ILLINOIS REGION**

R.F. Aron, B.A. Beehler, R.J. Ende, L.T. Garthe, N.N. Joiner, T.E. Kelley, L.M. Killough, M. Kozdronkiewicz, J.R. Kraut, J.D. Lang, M.R. Piotrowiak, P. Ramachandran and Loni Walker\*  
Biology Department, Illinois Wesleyan University

Members of the Illinois Wesleyan General Biology Science Education Alliance (SEA) laboratory isolated and characterized fifteen distinctive phages capable of infecting *Mycobacterium smegmatis*. Each student collected soil samples from the central Illinois area and used direct plating or enrichment techniques to isolate phages. Streak assays were used to purify single phage populations. Individual phage populations were then characterized and DNA was isolated. Based on the following characteristics; plaque morphology (size and turbidity), life style (temperate or lytic) and DNA restriction patterns, we determined that each student has isolated a unique phage. The DNA from a single Mycobacteriophage, Kazan, was sent to the University of Pittsburgh for genome sequencing. DNA Sequencing determined that Kazan is 52,160 base pairs, including 10 base pair 3' overhang (CGGTCGGTTA), and a member of the A6 subcluster of Mycobacteriophages. Kazan is most closely related to the phages EricB and DaVinci (99% identity). Genome analysis, using the computer programs DNA Master, Glimmer, GeneMark, and Aragorn, determined that the Kazan genome housed 99 genes and 3 tRNAs. The potential protein function for each gene was determined using the computer programs HHPred, BLASTP and Phamerator. All the individual phage data was submitted to the Mycobacteriophage DataBase and the genome annotation, when completed, will be submitted to the DNA database, GenBank.

Poster Presentation P3

**A NEW SPECIES OF FROG OF THE GENUS *PRISTIMANTIS*  
(STRABOMANTIDAE) FROM A CLOUD FOREST IN SOUTHERN PERU**

Anton Baltuska and Edgar Lehr\*

Biology Department, Illinois Wesleyan University

Frogs of the genus *Pristimantis* are found throughout northern South America in various habitats ranging from lowland rainforest, cloud forest and up to 4000 m in the puna. Members of the family Strabomantidae breed terrestrially without a free swimming tadpole; instead froglets hatch from terrestrially deposited eggs. Of the 455 known species of *Pristimantis* 123 are known from Peru. Here we describe a new species from the Cordillera Central in the Andes of southern Peru. The new species is known from only one female specimen. It is readily distinguished from all other members of the genus by a combination of a dark brown dorsum with large white blotches, absence of tympanic membrane and annulus, bright orange-red color in the groin and concealed surfaces of hind legs, and a distinct iris with intersecting vertical and horizontal streaks forming a cross. The new species is most similar with *Pristimantis cruciocularis* from the Andes of central Peru, but differs in several morphological characteristics such as size: Specimens of *P. cruciocularis* have a snout-vent length of 11.4–21.8 mm ( $n = 14$ ) compared to 23.5 mm ( $n = 1$ ) in the new species.



Poster Presentation P4

**THE CONTEXT OF DIABETES WITHIN THE HISPANIC POPULATION  
EL CONTEXTO DE LA DIABETES ENTRE LA POBLACIÓN HISPANA**

Sarah Berk and Carolyn Nadeau\*

Hispanic Studies Department, Illinois Wesleyan University

Over the past couple of months I have had the opportunity to observe and to aid in translation for Hispanic patients at the Community Health Care Clinic in Bloomington, IL. During my time at the community clinic, cases of diabetes have arisen frequently and have led to this inquiry into the context of diabetes within the Hispanic population. The positive and negative characters of a traditional Hispanic diet will be discussed, as well as the health implications this has for a diabetic patient. Other challenges within the Hispanic population that relate to diabetes self-management will be addressed as well. Lastly, the presentation will discuss methods that can be utilized to help Hispanics better manage their diabetes while keeping in mind a cultural sensitivity that works alongside the current diet and stresses small changes. Esta presentación bilingüe será en inglés y en español.

Poster Presentation P5

## **BINARY MUSICAL BIAS IN IRREGULAR METERS**

Akash Bhatia and Joseph Plazak\*  
School of Music, Illinois Wesleyan University

The rhythmic structures of Western art music tend to be highly regular. With regards to metrical organization (i.e. grouping of strong and weak beats), previous research by Huron (2006) indicates that binary (strong-weak) meters tend to be more prevalent than ternary (strong-weak-weak) meters. However, relatively little is known about other types of metrical organization, such as meters based on 5- or 7-beat patterns. Results are reported from a corpus study of 5- and 7-beat musical melodies. Five-beat metrical patterns were found to occur more frequently than meters with 7-beat patterns,  $\chi^2(1, N = 144) = 30.25$ ,  $p < 0.001$ ,  $\phi = 0.46$ . This finding was consistent with the hypothesis that simpler metrical structures are preferred to more complex ones, and therefore, also more prevalent in the literature. The results warrant future research on listeners' preferences for simpler metrical structures in the context of irregular meters.

Poster Presentation P6

## **STRUCTURAL ANALYSIS OF A 2-D MICRON-SCALE PARTICLE ARRAY**

Sam Birsa, Mohamed ElKabbash, and Gabriel Spalding\*

Physics Department, Illinois Wesleyan University

General diffraction theory is commonly applied in analyzing crystal structures through x-ray diffraction. However, by using polystyrene spheres with diameters in the micron range, we can observe diffraction directly with visible light. By putting a monolayer of spheres in solution on a glass slide and passing a laser through onto a screen, we observe the distinct diffraction pattern as surface tension draws the spheres into a two-dimensional array. Then, with the help of image processing software, we can take intensity measurements of different regions of the diffraction pattern, calculate lattice spacing of the spheres' lattice in real space, calculate the radial distribution function, and measure the diameter of the spheres to compare with their expected value.

Poster Presentation P7

## **BREASTFEEDING PRACTICES IN THE UNITED STATES**

Jennifer Boll, Hannah Smith and Carolyn Nadeau\*  
Hispanic Studies Department, Illinois Wesleyan University

The topic of breast-feeding has long been a controversial issue in the United States. The incidence of breast-feeding in Latino families is the lowest of all major ethnic groups. There are many reasons a family decides to breast or bottle to feed their child. Through the literature, we have analyzed the factors that influence a family's choice. By analyzing family structures, beliefs, education levels, and cultural norms we have concluded there are many factors that influence their decisions. As future health care providers, we recognize the role we play in educating families and promoting breastfeeding. Through this research, we hope to inform Latino families make the best decisions for their children and to promote healthy outcomes.

Poster Presentation P8

**BECOMING AMERICAN  
FROM BULGARIA TO THE UNITED STATES:  
THE FIRSTHAND EXPERIENCE OF NIKOLAY KARNEV**

Kevin Bowers and Rebecca Gearhart\*

Sociology and Anthropology Department, Illinois Wesleyan University

Through the use of collaborative ethnography and photography, this poster provides insight into the immigration story of Nikolay Karnev, a Bulgarian student at Illinois Wesleyan University. With the use of collaborative methods and visual media, this research provides insight into the process for a Bulgarian student to obtain a student visa to study in the United States. This poster visually narrates different aspects of Nikolay's immigration story that Nikolay and I chose for the project. The use of photographs to aid in telling Nikolay's story is a technique used by visual anthropologists. With the use of Photoshop, we recreated scenes from Nikolay's journey to America that were key aspects of his story.

Poster Presentation P9

**AMERICAN BY CITIZENSHIP OR AMERICAN AT HEART: AN ANALYSIS  
OF BECOMING AN AMERICAN AS SEEN THROUGH THE EYES OF AN  
INDIAN-AMERICAN IMMIGRANT**

Helen Brandt and Rebecca Gearhart\*

Sociology and Anthropology Department, Illinois Wesleyan University

This poster presentation focuses on Dr. Narendra Jaggi, a professor of Physics at Illinois Wesleyan University, who is originally from India. Dr. Jaggi migrated to the U.S. in 1982, but did not become a citizen until 2008. Through visual ethnographic methods, Dr. Jaggi narrated his experience of immigration and of being an American. He shared important photos with me, and we collaborated on specific themes and pictures to represent his immigration story. Dr. Jaggi believed in many American values before coming to the U.S., and showed me that becoming a citizen is not the same as being an American at heart. The poster demonstrates that being an American does not just mean being born here or acquiring citizenship, it can also mean adapting to certain recognizable aspects of American culture, which one does not have to be born in the U.S. to learn.

Poster Presentation P10

**“A PSYCHOLOGICAL INVESTIGATION OF REALITY AND FANTASY  
SEEN WITHIN *DON QUIXOTE*”**

**“UNA INVESTIGACIÓN PSICOLÓGICA DE REALIDAD Y FANTASIA  
VISTO EN *DON QUIJOTE*”**

Nina Butler and Carolyn Nadeau\*

Hispanic Studies Department, Illinois Wesleyan University

This paper investigates the psychological elements of reality and fantasy within the characters of Miguel de Cervantes Saavedra's *Don Quixote* and how it influences their own identities. The novel is set during a time where knighthood is a thing of the past, but Don Quixote, the protagonist, courageously goes against the norm in the attempt to become a famous knight as portrayed in his coveted chivalric books. Because he goes against the norm, most of his peers believe he has truly “gone mad.” Along with his squire, Sancho, they partake in several successful and unsuccessful adventures while traveling throughout Spain. Whether or not the adventures are actually successful depend upon what really happens and how Don Quixote perceives them. In general, Don Quixote fails to see certain events that occur during his travels, whereas Sancho has a better sense of reality. They meet several people throughout their journey, some who trick them and some who genuinely try to help them achieve the goals they are pursuing. Together, while interacting with several people of diverse backgrounds, they go through their own development of how they perceive the world and decipher the true meaning of reality versus fantasy.

Poster Presentation P11

## **EFFECTS OF GOOD LIMB TRAINING ON MOTOR RECOVERY FOLLOWING STROKE IN C57BL/6 MICE**

Kimberly Cheffer & Abigail Kerr\*

Psychology Department, Illinois Wesleyan University

Upper limb impairment is a common and chronic consequence of stroke that may lead to overreliance on the good limb (GL). Although functionally adaptive, this compensatory strategy may limit recovery of the bad limb (BL). Previous research has established that GL training in mice impairs recovery of the BL following stroke in the short term. This study extends these findings by determining that GL use following stroke prevents functional recovery in the long term. Mice underwent pre-operative training on the Pasta Matrix Reaching Task. Unilateral stroke was then induced through intracortical infusions of endothelin-1. Post-operative training of the GL (or control procedures) occurred for two weeks after stroke. Following post-operative training, all mice received rehabilitative training of the BL for 28 days. Throughout rehabilitative training, control mice exhibited functional recovery while impairment persisted in GL mice. These findings suggest permanent damage to neural activity following post-stroke behavioral compensation.



Poster Presentation P12

**CRANIAL NEURAL CREST PROLIFERATION AND INCORPORATION  
INTO THE DEVELOPING JAW OF REDEYE TETRA  
(*MOENKHAUSIA SANCTAEFILOMENAE*)**

Navika Chhabra, Kieran Meyer, and Brian Walter\*  
Biology Department, Illinois Wesleyan University

Neural crest cells are a group of multivalent cell populations that are unique to vertebrates and give rise to many cell lineages including those in the craniofacial cartilage and bone. Our research examines the neural crest cell proliferation patterns in the developing jaw of the redeye tetra (*Moenkhausia sanctaefilomenae*). Using BrdU, an analogue of thymine, we are able to detect proliferating cells at different points of development of the jaw elements, the ceratohyal and Meckel's cartilage, in particular. We have observed a period of rapid proliferation of cranial neural crest cells prior to the cartilage formation followed by little or no cell division after cartilage formation. Our results show a rapid growth of the jaw as a result of continued incorporation of cells to the cartilage without continued division.

Poster Presentation P13

## **THE FEASIBILITY OF ELIMINATING DISPOSABLE PLASTIC WATER BOTTLES AT ILLINOIS WESLEYAN UNIVERSITY**

Joseph Daniels and Abigail Jahiel\*

Environmental Studies Program, Illinois Wesleyan University

The bottled water industry is polluting, costly, and dangerous to the health of the consumers and the environment. Chemicals in the plastic bottles often leach into the water, which can be harmful to the consumer. Water bottles also create many problems after disposal, often ending up in landfills or in waterways rather than being recycled.

This report looks into what needs to be done to eliminate the sale of disposable plastic water bottles at Illinois Wesleyan University (IWU). It discusses the negative effects of the bottled water industry, and why a ban would benefit IWU students, faculty, and staff. What other college campuses have done to eliminate bottled water, and how their strategies could be applied at IWU is discussed, but it is recognized that every campus is different and has its own unique challenges to overcome. Therefore Illinois Wesleyan's particular case is considered in-depth, including a look at Bloomington, IL's public drinking water, IWU's current stance on sustainability, and the views of the IWU community.

Poster Presentation P14

**“UNCHANGING REPRESENTATIONS OF MUSLIMS IN  
*DON QUIJOTE* AND 21<sup>ST</sup> SPAIN”**

Ivy Craig and Carolyn Nadeau\*

Hispanic Studies Department, Illinois Wesleyan University

This paper analyzes the relations between Christians and Muslims throughout Spanish history and the representations of these relations in the text of Miguel de Cervantes Saavedra's *Don Quijote*. Throughout the history of Spain there have been intense conflicts between Christians and Muslims. From 711 until 1492, Muslims had power over much of the land that today comprises the country of Spain and this power created tensions between the two groups. This dichotomy between Christianity and Islam resulted in monumental battles and the infamously poor treatment of Muslims such as the mass expulsion during the reconquest and the mass conversion of Muslims to Christianity. Negative sentiments and stereotyping towards Muslims that have existed since the middle ages in Spain are represented in the story of *Don Quijote* and persist in Spanish society today.

Poster Presentation P15

## **PIEROGIES TO HAMBURGERS: AN IMMIGRATION STORY**

Madeline Cross and Rebecca Gearhart\*

Sociology and Anthropology Department, Illinois Wesleyan University

This ethnography follows the story of one immigrant, Agnieszka Kubas, from Poland to America. Collaborative ethnography and photography were utilized to gain insight into Agnieszka's experiences and the impacts of immigration. Using participant observation and interviews, Agnieszka and I created photos and captions to capture the defining characteristics of her story. The main issues identified were the language barrier, the transition to the American school system, and the balance of both her Polish and American identities. The research provides insight into Polish immigration in particular though themes that came across may be generalized to the experiences of many American immigrants.

Poster Presentation P16

**THE ADJUSTMENT OF POSITIVE AFFECT IN  
RECENTLY BEREAVED WIDOWS**

Zachary Eckert and Mignon Montpetit\*

Psychology Department, Illinois Wesleyan University

The experience of conjugal loss has often been likened into a roller coaster, with extreme emotional highs and lows. The current study investigates the dynamic emotion regulation over the first three months of bereavement. In addition, four resilience resources were investigated as predictors of intraindividual differences in the parameters of change in positive affect. Results of analyses of daily data collected over 98 days suggest that there are fluctuations in positive affect following conjugal loss that occur at a non-zero frequency and that damp over time; furthermore this study identifies personal and social resources that positively influence adjustment.

Poster Presentation P17

**GENOME ANNOTATION OF A BACTERIOPHAGE OF *RHODOBACTER*  
*CAPSULATUS* ISOLATED FROM CENTRAL ILLINOIS WATER**

Madeline R. Cross, Marlena M. Szewczyk, and David Bollivar\*

Biology Department, Illinois Wesleyan University

Two bacteriophages that infect *Rhodobacter capsulatus*, Saxon and Spartan, were isolated from water in the Bloomington/Normal, IL area. After purification of the phages, genomic DNA from the phages was sent to the University of Pittsburgh to be sequenced. In order to annotate the two genomes, the software packages DNA Master, HHpred, Glimmer, and GeneMark were utilized to analyze and characterize the coding sequence, gene number, and protein functions. Spartan's genome consists of 43,964 base pairs and 62 genes and Saxon's genome is composed of 36,096 base pairs and 48 genes. Through genomic analysis of Spartan, it was concluded that many gene functions were similar to *Burkholderia* and *Pseudomonas* phages. However, most gene functions have yet to be identified. The completed annotation of the genome will be submitted to the GenBank database.

Poster Presentation P20

**THE SIGNIFICANCE OF THE WINDMILLS IN  
*DON QUIXOTE OF LA MANCHA***

**EL SIGNIFICADO DE LOS MOLINOS DE VIENTO EN  
*DON QUIJOTE DE LA MANCHA***

Rosaleen Egan and Carolyn Nadeau\*

Hispanic Studies Department, Illinois Wesleyan University

Even if they have not read Miguel de Cervantes's *The Ingenious Gentleman Don Quixote of La Mancha*, most people are familiar with Quixote's adventure with the windmills. The impact of the episode is undeniable—from the allusive idiom *tilting at windmills* to Picasso's famous painting of Don Quixote and his squire, Sancho, with windmills in the background. This project examines *why* the windmills episode continues to have an impact. Findings suggest that the windmills episode is Don Quixote's best-known adventure because it transcends time and social class. For example, windmills are still present today, and Don Quixote's fight with the windmills represents the ever-present struggle between man and machine. Additionally, windmills are typically not owned by individual people, but form part of the environment as icons that appeal to people across centuries and social classes.

Poster Presentation P21

**THE LONG ROAD TO BECOMING AMERICAN: ONE KENYAN'S  
IMMIGRATION JOURNEY FILLED WITH PERSEVERANCE,  
DISCRIMINATION, AND STUDENT VISA RESTRICTIONS**

Kaitlyn Eichinger and Rebecca Gearhart\*

Sociology and Anthropology Department, Illinois Wesleyan University

This poster represents the collaborative ethnographic methods used to provide insight into the journey of Mid-hat Said Abdulrehman, a Kenyan immigrant. The visual ethnographic methods of inquiry consisted of using Mid-hat's photos to gain a deeper understanding of his journey to America. This research provides an insider's perspective on his life by demonstrating the issues he faced that he finds most significant. This poster visually examines the immense amount of determination Mid-hat had throughout his journey to America and how this perseverance was fueled by the support he had from his family. It additionally examines the discrimination he faced and the challenges he had to confront once he arrived and was living in America.



Poster Presentation P23

**THE EFFECT OF COMMUNITY PARTICIPATION ON SUBJECTIVE  
WELL-BEING IN COMMUNITY DWELLING ELDERLY WITH PHYSICAL  
HEALTH CHALLENGES**

Elisabeth English and Mignon Montpetit\*  
Psychology Department, Illinois Wesleyan University

Previous research found correlations between health and life satisfaction, health and community participation, and community participation and life satisfaction. The current project investigates the confluence of these three variables, specifically whether life satisfaction can be balanced in those with decreased health by increasing the amount of time spent participating in the community. Using a sample of community dwelling elders from five counties in central Illinois, a mediation analysis was run to confirm the relationships between each of the three variables and to determine whether community participation arbitrated the relationship between physical health challenges and life satisfaction. Results of this study can be applied as evidential support for increasing life satisfaction by increasing participation in the community in those with physical health challenges. Alternative exploratory models may be used, as well, to further investigate direct effects between the variables.

Poster Presentation P24

## **DON QUIJOTE A TRAVÉS DE LA LITERATURA INFANTIL/DON QUIJOTE THROUGH CHILDREN'S LITERATURE**

Elizabeth Exo and Carolyn Nadeau\*

Hispanic Studies Department, Illinois Wesleyan University

The novel *Don Quijote de la Mancha* is a classic known throughout the centuries and has left behind such a legacy that no one can deny its importance in the world of literature. However, young readers are unable to immerse themselves in this classic unless through an adapted version of the original novel. Through an analysis of various children's adaptations of *Don Quijote de la Mancha*, this investigation suggests that the most important themes of the novel, such as friendship, duality, and identity, are still preserved within the adaptations, although somewhat modified to reach a younger audience.

Poster Presentation P25

## **THETA RHYTHM IN WORKING MEMORY POST VALENCE STIMULI PRESENTATION**

Sunny Shah, Ethan Fischer, Melissa Fuesting, Nabeel Mumtaz, and Joseph Williams\*  
Psychology Department, Illinois Wesleyan University

While the influence of emotion on long-term memory processes is well-understood, it remains unclear whether the presence of emotional information improves or diminishes working memory (WM) performance. Emotional stimuli may enhance WM by activating attentional systems in the brain. Electrophysiological investigations have determined that brain areas associated with memory and emotion interact via a phenomenon known as the theta rhythm, a common correlate of both WM and emotional processing in the frontal lobe. Participants will have completed a WM task with dot arrays while electrical activity in the brain was recorded with an electroencephalograph (EEG). Scenery face and non-face stimuli (positive, negative, and neutral types) were incorporated throughout the memory task to determine the effects of emotion on both the theta rhythm and subsequent memory performance. Results should show higher task accuracy on trials with emotional components compared to trials without. Additionally, memory performance should be related to the presence of theta reset at different task phases.

Poster Presentation P26

## **LASER-BASED PRESSURE MEASUREMENT**

Juan GomezVelez, Kyle French and Bruno deHarak\*  
Physics Department, Illinois Wesleyan University

We are developing a technique for measuring gas pressure using laser induced plasmas (LIPs). To accomplish this, we are studying how various characteristics (e.g., emittance, and size) of LIPs vary as a function of pressure within a test chamber filled with known pressures of argon. This technique should allow measurements of pressure with spatial resolutions of less than 1 mm, without the presence of a physical probe that might disrupt the environment being studied. We will be presenting the preliminary results of our characterization of LIPs.

Poster Presentation P27

## **THE EFFECT OF PETS AND NATURE ON ENVIRONMENTAL IDENTITY AND CONNECTION TO ANIMALS**

Victoria Whitaker, Kellye Kohn, Alice Fontana and Linda Kunce\*  
Psychology Department, Illinois Wesleyan University

This study examined environmental identity and connection to animals in college students. Previous research has suggested that exposure to animals and nature can increase caring for both animals and nature itself. Participants were randomly assigned to one of four video conditions and analyzed for differences in mood, environmental identity, and connectedness to animals after the viewing of these videos. No significant differences were found between experimental groups for environmental identity or connectedness to animals, but it was found that those who viewed an animal reported greater improvement in mood, and that this effect differed based on whether the animal was inside or outside. Results did indicate that those who owned pets during childhood reported higher levels of environmental identity than those who did not own pets. The findings of this study suggest the need for more research to determine how connection with nature and animals can best be nurtured.

Poster Presentation P28

**A LOOK AT MULTI-DECOMPOSITIONS OF COMPLETE  
GRAPHS INTO GRAPH PAIRS OF ORDER 4**

Yizhe Gao and Daniel Roberts\*

Mathematics Department, Illinois Wesleyan University

Firstly, a graph  $G$  consists of a vertex set  $V(G)$ , and an edge set  $E(G)$  of endpoints which relate two vertices with each edge. Also, a decomposition of a graph is a list of subgraphs such that each edge appears in exactly one subgraph in the list. In the field of-graph theory, graph decomposition is an active field of research. One type of decomposition is graph pairs. A graph pair is a pair of graphs on the same vertex set whose union is the complete graph. Abueida and Daven studied-decompositions of complete graphs into graph-pairs of order four. In their proof, they left a small part to the readers. We will complete this proof.

Poster Presentation P29

**BICULTURAL LIVING: MARIA LUISA MAINOU'S EXPERIENCE WITH  
IMMIGRATION AND CULTURAL CHANGE**

Alicia Gummess and Rebecca Gearhart\*

Sociology and Anthropology Department, Illinois Wesleyan University

This poster focuses on the experiences of Maria Luisa Zamudio Mainou, a first-generation Mexican immigrant who lives in Bloomington, Illinois as a legal permanent resident. Maria Luisa enjoys living in the U.S. and retains a strong link to her Mexican heritage through artwork displayed in her home and close connections with her family in Mexico. Using photographs I took of Maria Luisa's house and artwork, I show how she has integrated the legacy of her home country with her current lifestyle. The images also demonstrate the use of visual methods in ethnographic research. Maria Luisa's story relates to a number of issues in anthropology that the poster briefly addresses, including the effects of transnationalism, immigrant replenishment, and kinship networks. She provides an insightful first-hand account of a bicultural perspective that integrates both the host and origin nations' customs and languages while assigning equal value to both.

Poster Presentation P30

## **THE IRIDESCENCE OF MORPHO BUTTERFLY WINGS**

Victoria Halevy and Bruno deHarak\*

Physics Department, Illinois Wesleyan University

Morpho butterfly wings get their brilliant colors from the external structure of scales on the surface of the wing. This structure is a series of ridges spaced a few hundred nanometers apart. When light shines on these ridges, interference effects cause iridescence. A spectrometer can be used to more closely study this iridescence. Measurements made at different angles will be compared to mathematical models of scale structure. Studying the structure of a butterfly wing can be used pedagogically to teach about the nature of light, and to make observations about optical phenomena in the natural world.



Poster Presentation P31

## **HOME, TRANSFORMED: A VISUAL ETHNOGRAPHY OF A PUERTO RICAN PROFESSOR IN THE MIDWEST**

Laura Hones and Rebecca Gearhart\*

Sociology and Anthropology Department, Illinois Wesleyan University

Through the use of collaborative ethnography and photography, this poster provides insight into the struggles of identity and exclusion faced by Puerto Ricans living in the continental United States. Utilizing collaborative methods and visual media, this research presents the story of a local Puerto Rican sociology professor. This poster visually examines how this woman's experience as a migrant has been characterized by a deep-seated ambivalence regarding her status as a United States citizen. Additionally, it illustrates how three experiences (teaching sociology as a woman of color in a predominantly white university, forming communities with other local Latinos/as, and becoming a mother to a bicultural son) have shaped and continue to shape her notion of "home."

Poster Presentation P32

**RUSSIAN-JEWISH IMMIGRATION AND THE  
LIFE EXPERIENCES OF DR. MARINA BALINA**

Lauren Henry and Rebecca Gearhart\*

Sociology and Anthropology, Illinois Wesleyan University

This poster presents the life and immigration story of Dr. Marina Balina through the utilization of collaborative visual ethnography and photography. This research provides insight into the journey of a Russian-Jewish immigrant through the experiences of Dr. Balina, which are illustrated by visual representations created in collaboration with her. These collaborative efforts included interviews with the use of a family photo album and working with Dr. Balina to select items to represent the most important features of her story through images. Some of these most significant aspects of this particular story are presented in the photographs integrated into the poster, which provide information on the background and situation of Dr. Balina in Russia and consequently the motivations for her eventually leaving Russia during the Soviet era. It also highlights the complex dual-identity that Dr. Balina feels as a result of her immigration and her contrasting feelings for her home country and the United States.

Poster Presentation P33

## **DETERMINING THE LOCATION OF AN OBJECT IN 3 DIMENSIONAL SPACE USING A TWO CAMERA SYSTEM**

Christopher Jent, Nickolas Miller, and Bruno deHarak\*  
Physics Department, Illinois Wesleyan University

Photographs taken of an event can be useful when analyzing the event. However, photographs can only give limited information about the location of objects if the distance to the objects is not known. We are developing a two camera system that overcomes this limitation. The two cameras are connected so that they will take pictures simultaneously. This system will allow us to determine the location of an object seen by both cameras in three dimensional space. Possible uses for this system include: tracking the movement of flying or falling objects, or objects submerged in liquid. We will be using this system to track the movement of small waterborne organisms.

Poster Presentation P34

## **FEEDING MODES OF LARVAE OF *NEMATOSTELLA VECTENSIS* (CNIDARIA: ANTHOZOA)**

Amanda KehrSmith and William Jaeckle\*  
Biology Department, Illinois Wesleyan University

We assessed the ability of larvae of the starlet sea anemone, *Nematostella vectensis*, to assimilate dissolved organic material (DOM) and ingest artificial and natural particles from seawater. Planulae were exposed to the proteins ferritin and labeled bovine serum albumin (FITC-BSA) and the polysaccharides iron dextran and labeled dextran (FITC-dextran) at solute concentrations between 0.25-1.0 mg/mL for 1-5 hours at 22°C. Other larvae were incubated with polystyrene beads (0.5  $\mu\text{m}$ ,  $10^6$  beads/mL and 4.5  $\mu\text{m}$  and 6  $\mu\text{m}$ ,  $10^3$  beads/mL) or with algal cells (*Dunaliella tertiolecta*,  $5 \times 10^3$  cells/mL) for 2.5-5 h. The label from all provided macromolecules was detected only within the gastrovascular cavity. In intact and sectioned (1 $\mu\text{m}$ ) larvae assimilation of ferritin and BSA-FITC was detected within cells of the pharynx and the endoderm. The label from iron dextran and FITC-dextran was not detected within cells. Control larvae not exposed to provided macromolecules showed no detectable label. We found no particles in the gastrovascular cavity of larvae. These data indicate that particulate foods do not contribute to the energetics of larval development of *N. vectensis*. In contrast, planulae assimilated some forms of DOM (proteins) but not others (polysaccharides), suggesting that specific DOM could contribute to the energetics of larval development.

Poster Presentation P35

## **FRAMES AND SPLINE FRAMELETS**

Tung Nguyen, Nahee Kim and Tian-Xiao He\*  
Mathematics Department, Illinois Wesleyan University

Frames can be seen as a generalization of orthonormal bases, which not only maintain useful characteristics of orthonormal bases but also allow more flexibility in applications. The applications of frames include communication and image processing, as its characteristic inherited from orthonormal bases helps speed up the transmitting and processing time while its additional flexibility adds to frames the ability to reconstruct lost information. In this project, we study the construction of a class of tight frames in Euclidean spaces. Also, we use Fourier transforms and the techniques of Multi-Resolution Analysis (MRA) in wavelet analysis to investigate a class of tight spline framelets.

Poster Presentation P36

**GAMAN: “ENDURING THE SEEMINGLY UNBEARABLE  
WITH DIGNITY”**

Amanda Knezovich and Rebecca Gearhart\*

Sociology & Anthropology Department, Illinois Wesleyan University

When considering the process of becoming American, Professor Sumer Seiki has a personal story that reveals the perseverance of four Japanese-American paternal generations that have endured a harrowing journey to become American. Through collaborative methods, participant-observation, ethnographic interviewing, and academic research, this poster provides insight into the lives of Japanese-Americans from the 1880's to present day. It specifically highlights the hardships that Professor Seiki's family faced when they were forced into an internment camp in Arizona during WWII. This poster examines and explains how the experiences of Professor Seiki's great-grandfather, grandfather, and father have shaped her identity and how she understands her American citizenship. It additionally exposes the idea of how family and the determination to improve the quality of life for one's family persists over all else.

Poster Presentation P37

## **CHEMISTRY IN A CAN**

Justyna Koscielniak and Manori Perera\*

Chemistry Department, Illinois Wesleyan University

Interstellar medium (ISM), the space between stars, is thought to be the location where molecules such as water are originated. So far, there have only been 150 molecules identified in the ISM. This low number implies that our knowledge is limited on how these molecules are formed and processed within the ISM. The temperatures within the ISM range from 20 K to 100 K and pressures get as low as  $1 \times 10^{-9}$  torr. Under such extreme conditions, chemical reactions do not proceed the same way they would on Earth. Therefore, we are interested in building a custom instrument that can replicate space conditions and allow us to conduct chemical reactions important to space. My part involved building the first vacuum chamber (out of three) and designing a Faraday cup as an ion detector.

Poster Presentation P38

**DETERMINING THE FEASIBILITY OF UNIVERSAL ACCESS TO BUS  
TRANSPORTATION FOR  
ILLINOIS WESLEYAN UNIVERSITY STUDENTS**

Elizabeth Kuehn and Abigail Jahiel\*

Environmental Studies Program, Illinois Wesleyan University

In a car-based society, transportation has negative environmental and economic implications. However, programs like Universal Access that promote public transportation offer low cost, sustainable alternatives. Under Universal Access, a community group contracts with the local public transit system to attain 'fare free' unlimited access to public transportation at a negotiated cost (Toor et. al 2004). The purpose of this study was to determine the feasibility of creating a Universal Access program for Illinois Wesleyan University students. My research included a focus group and survey of IWU students to determine transportation habits and whether students desire a Universal Access program. It revealed that IWU students are interested in creating a Universal Access program. The study suggests that in order to move toward more sustainable transportation policies, IWU should develop educational programming about local bus system use and create a stakeholder committee to work out the details of a Universal Access program with Connect Transit.



Poster Presentation P39

## **DESIGN AND CONSTRUCTION OF A GAS-PHASE INSTRUMENT TO STUDY ASTRONOMICALLY RELEVANT MOLECULES**

Benjamin Lamm, Justyna Koscielniak, Andrew Sonnenberger and Manori Perera\*  
Chemistry Department, Illinois Wesleyan University

It is known that the chemistry in space is more diverse than on Earth. Therefore, astrochemists are interested in the kinetic studies of molecular formation in space. In Perera lab, a custom instrument is being built to study the kinetics and dynamics of molecules known to exist in space. The instrument is composed of three vacuum chambers. These create a high vacuum ( $10^{-7}$  torr) where low temperature (10-100 K) molecules could survive, to simulate an environment similar to that of space. In the first chamber, an ion source creates charged molecules needed for reaction studies. A faraday cup is used to monitor the ion current generated by the ion source as a troubleshooting mechanism. My work involved designing and constructing the ion source, and constructing the faraday cup. Future work includes assembling the components within the first chamber, and creating ion optics needed to guide ions to the second chamber.

Poster Presentation P40

## **POTENTIAL FACTORS INFLUENCING LENIENCY TOWARD VETERANS WHO COMMIT CRIMES**

Amanda Larsen and Amanda Vicary\*

Psychology Department, Illinois Wesleyan University

Post Traumatic Stress Disorder (PTSD) can be used by individuals charged with a crime to argue for a not-guilty verdict or a reduced sentence. The PTSD defense is commonly used by veterans who have committed a crime, yet little research has been conducted on what factors of both the diagnosis and the crime may make the defense seem more legitimate in the minds of jurors. To investigate these factors, participants read vignettes describing a crime committed by a veteran and gave judgments regarding the guilt of the defendant. Results revealed the degree to which the method of murder (stabbing versus shooting), timing of PTSD diagnosis (before or after the crime), and degree of combat experienced (either witnessing a bombing or killing an insurgent) impacted participants' judgments of guilt and beliefs regarding successful rehabilitation of the veteran.

Poster Presentation P41

**KINETIC CHARACTERIZATION OF PORPHOBILINOGEN SYNTHASE FROM  
*CLOSTRIDIUM PERFRINGENS***

Michelle Larson and David Bollivar\*  
Biology Department, Illinois Wesleyan University

Porphobilinogen synthase (PBGS) catalyzes the condensation of two  $\delta$ -aminolevulinic acid (ALA) molecules to form porphobilinogen (PBG), which is the first common reaction for the synthesis of tetrapyrroles such as heme and chlorophyll. The kinetic characteristics of PBGS from *Clostridium perfringens* were previously unknown. An expression plasmid containing the *C. perfringens* PBGS gene was transformed into *E. coli* cells, PBGS synthesis was induced using Isopropyl  $\delta$ -D-1-thiogalactopyranoside (IPTG), and PBGS purification was performed using ion-exchange and hydrophobic interaction chromatography. After purification of PBGS, protein assays were utilized to determine the optimal conditions for PBGS activity. The optimal enzyme concentration and buffer pH were calculated, along with the  $V_{\max}$  and  $K_m$  values and the influence of metal ions as regulators.

Poster Presentation P42

**DEVELOPMENT AND CHARACTERIZATION OF MULTI-FUNCTIONAL PROBES FOR USE WITH SCANNING ELECTROCHEMICAL MICROSCOPY**

Jiwon Lee, Colleen Leonard, and Melinda Baur\*  
Chemistry Department, Illinois Wesleyan University

Using Scanning Electrochemical Microscopy (SECM) with electrode probes that make simultaneous current and impedance measurements is useful for analysis of biological substrates. The current and impedance measurements are both dependent upon the proximity to a surface. Experiments with the single carbon fiber electrodes show that the impedance measurements are independent of the current and applied potential. In order to detect neurotransmitter release from a cell, the electrode must be positioned very close to the cell surface. Impedance-based positioning eliminates the need for addition of biologically toxic redox mediators to position the electrode. Furthermore, it was found that multiple carbon fiber electrodes are able to explore a larger surface area than the single carbon fiber electrodes; this is useful for larger biological substrates, such as isolated taste buds. The distance-dependent impedance signals from multiple fiber electrodes were also characterized. Topographical images of biological substrates are generated by moving the electrode over the surface of the cells while monitoring the distance-dependent impedance signal. Because the current and impedance measurements are independent of each other, it is possible to combine imaging and other electrochemical techniques using the same electrode.

Poster Presentation P43

## **CHARACTERIZATION OF DUST**

Xi Lin, Madeline Lyons, and Bruno deHarak\*  
Physics Department, Illinois Wesleyan University

Dust and gas play important roles in the formation of celestial bodies. In order to study more about the dust in space, we do experiments to study the dust samples that might have similar characteristics as those in space. We have been developing methods to get a close look of dust. Such methods includes using of SEM to observe the basic physical characteristic of the dust, creating program assisting image analyzing, optimizing the display of the dust by trying different ways to get an even distribution of dust, etc. Some convenient ways for analysis have been developed. In later research, hopefully we can get a better look of the dust samples and will be able to use such features to study more about the space.

Poster Presentation P44

## **MANIPULATING MICRON-SIZED PARTICLES**

Nathaniel Nesbit, Boxiang Liu, Brian Sorich, and Gabe Spalding\*  
Physics Department, Illinois Wesleyan University

In this study, we trapped a micron-sized dielectric particle using a technique known as Optical Tweezers. A focused laser created a potential ‘well’ that catches and holds onto a selected bead near the laser’s focal point. Various sizes of silica beads ( $\sim 1\text{-}16\text{ }\mu\text{m}$  diameter) were successfully trapped (even at relatively low power levels), as well as micro-droplets of birefringent liquid crystals. Using a quarter waveplate, we circularly polarized our laser beam, and then demonstrated that such beams possess angular momentum, by transferring some of that angular momentum to the liquid crystal micro-droplets. Besides SAM, beams may be created which contain orbital angular momentum (OAM). Future studies may include adding OAM using a spatial light modulator to laser beam, and implementing another optical trap to create a dual-trap system.

Poster Presentation P45

## **A GRAPHICAL INTRODUCTION TO SPECIAL RELATIVITY BASED ON A MODERN APPROACH TO MINKOWSKI DIAGRAMS**

Boxiang Liu and Thushara Perera\*

Physics Department, Illinois Wesleyan University

We present a graphical method that can be used to learn/teach Einstein's special theory of relativity. The "Minkowski diagram", developed in 1908 by Hermann Minkowski, has long been recognized as an effective graphical tool for introducing special relativity. In our study, we adapted and modernized this graphical method in a way that would help current college students progress from Galilean transformations (based on Newton's Three Laws of Motion) to the kinematics of relativity and other key results. This study has revealed new ways to apply Minkowski diagrams to well known problems in relativity. Here, we will introduce our graphical technique and apply it to the resolution of the famous the twin paradox.

Poster Presentation P46

**NAIROBI TO NORMAL: THE ROOTS, GROWTH, AND CULTIVATION  
OF AN ILLINOIS-BASED IMMIGRANT FARMER**

Katrina Lukes and Rebecca Gearhart\*

Anthropology and Sociology Department, Illinois Wesleyan University

Using collaborative ethnographic interview and visual research methods, this poster examines the immigration story of Janet Zintambila. Through the integration of preliminary research, discussion, and photography, this project intends to introduce Janet's distinctive journey within the larger framework of immigration in the United States. This poster first approaches Kenyan immigration to the United States as a whole in order to knowledgeably discuss Janet's story. The remainder of the poster represents three defining points in Janet's immigration story: national pride, community, and activism, and aims to discuss these points in light of her current status as a naturalized American citizen.



Poster Presentation P47

## **TESTS OF A NOVEL TECHNIQUE FOR FINDING GALAXIES IN MILLIMETER WAVELENGTH MAPS**

Alejandro Mancera and Thushara Perera\*  
Physics Department, Illinois Wesleyan University

The study of very distant “dusty” galaxies whose visible light is obscured by cosmic dust is a developing field in astronomy. To discover such galaxies, images of the sky are made with telescopes sensitive to millimeter-wavelength light. Because these images are inherently low in signal-to-noise, special image processing techniques are needed to reliably identify galaxies in them. Usually, a software “filter” is applied to a sky image in order to better distinguish galaxies from noise. We have developed a novel filter that, in principle, performs better than the standard filter used in the astronomical community. Our study, which involved testing this new filter, is presented here. This is a continuation of an improvement over work previously presented in 2010.

Poster Presentation P48

## **THERMAL AND PHOTOCHEMICAL REACTIONS OF HONO/ NO<sub>2</sub><sup>-</sup>: PH EFFECTS**

Divya Mani and Timothy Rettich\*

Chemistry Department, Illinois Wesleyan University

Nitrous acid and nitrite ion naturally occur in the environment and react with light to form hydroxyl radicals, a key ingredient in pollution studies. HONO and NO<sub>2</sub><sup>-</sup> are in equilibrium with each other, and their separate contributions to the production of hydroxyl radicals are not certain. In this study, UV-Vis spectrometry was used to determine the absorbance values of NO<sub>2</sub><sup>-</sup> and HONO under basic and acidic conditions, respectively. The order of the thermolysis reaction of HONO (~2.4) was also determined by using the absorbance values over time. Current work is focused on the photolysis of both species in the near UV (366 nm) and the use of a hydroxyl radical scavenger to better judge the relative rates of photolytic production of hydroxyl radicals from HONO and NO<sub>2</sub><sup>-</sup> at varying pH values.

Poster Presentation P49

## **BUILDING APPARATUS FOR QUANTUM OPTICS**

Ryan McGonagle and Gabriel Spalding\*  
Physics Department, Illinois Wesleyan University

We have begun assembling apparatus allowing study of fundamental principles of quantum mechanics, via experiments involving *single* photons. As an initial step, we are assembling components for protection of fiber-optic-coupled detectors with high quantum efficiency. After alignment is completed, we will examine 405nm photons passing through a BBO crystal. Rarely, single photons interacting with this crystal are emitted as a pair of entangled photons with a wavelength twice as long as the incident, blue photons. Only these “down-converted” photons can pass through filters we have added, and so only these 810nm photons will be detected by our single-photon detectors. This system can be extended to run experiments exploring the non-local nature of quantum wavefunctions, *e.g.*, the Grangier experiment, single-photon interference, and the Hardy-Bell experiment.

Poster Presentation P50

## **ISOLATION OF THREE NEW BACTERIOPHAGES FOR RHODOBACTER CAPSULATUS**

Brenda Miller and David Bollivar\*

Biology Department, Illinois Wesleyan University

Three new bacteriophages that infect the facultative anaerobic bacterium *Rhodobacter capsulatus* were isolated from water samples collected downstream of the Bloomington-Normal Water Reclamation District. Only two phages of *R. capsulatus* have been characterized at the molecular level. All three phages produced uniformly cloudy plaques of different diameters; *Rc-Rhea*, the first to be isolated and purified, had plaques 1.0 mm in diameter, whereas *Rc-Cronus* was the largest at 2.0 mm, compared to *Rc-Oceanus* at 0.2 mm. Samples were also collected from seven other locations, including just upstream of the same water reclamation facility. Plaques were not observed with samples from any other locale. Further study to describe these phages at the molecular level will be done using the purified high-titer lysate obtained during the isolation process.

Poster Presentation P51

**PROMISING TRAVELS AND UNFULFILLED DREAMS: A  
COMPARISON OF *OF MICE AND MEN* AND *EL INGENIOSO HIDALGO  
DON QUIJOTE DE LA MANCHA***

**(VIAJES PROMOTEDORES Y SUEÑOS INCUMPLIDOS: UNA  
COMPARACIÓN DE *OF MICE AND MEN* Y *EL INGENIOSO HIDALGO  
DON QUIJOTE DE LA MANCHA*)**

Scott Meyers and Carolyn Nadeau\*  
Hispanic Studies Department, Illinois Wesleyan University

Arguably one of the most widely acclaimed literary masterpieces, it is no surprise that Miguel de Cervantes's *El ingenioso hidalgo don Quijote de la Mancha* left a cultural legacy that has influenced the work of authors, artists, and filmmakers across the globe. Whether intentional of John Steinbeck or not, analysis of his literary work *Of Mice and Men* reveals various parallels between the two novels that extend from the complicated, transformative relationship between the two travelling protagonists of each novel to the lack of emphasis on female characters. A thorough evaluation of quotations, character interactions, and recurring themes and motifs divulged two tales that are highly reflective of one another.

Poster Presentation P52

## **EFFECTS OF EXERCISE ON STROKE RECOVERY IN C57BL/6 MICE**

Timothy Mueller and Abigail Kerr\*

Psychology Department, Illinois Wesleyan University

Stroke is one of the leading causes of disability worldwide. There is increasing interest in the understanding of basic mechanisms of stroke recovery through animal models. It has been demonstrated that exercise promotes neuroplasticity that results in improved learning in humans and animals. However, exercise also induces apoptosis due to the initial metabolic strain on the CNS. This study explores the use of an exercise supplemented regimen of skilled reaching to promote functional recovery following stroke in mice. Twenty-four mice received 19 days of pre-operative training on the pasta matrix reaching task. Beginning four days after stroke, mice were separated into four groups (control, exercise, skilled reaching, and exercise + skilled reaching) for three weeks. During this time both exercise and skilled learning were used as rehabilitative strategies. Functional recovery was assessed once weekly during rehabilitation. All post-stroke reaching function was compared to pre-operative levels.

Poster Presentation P53

## **CORROSION CASTING: A NOVEL METHOD FOR DETERMINING AVIAN EGGSHELL PORE MORPHOLOGY**

Mark Swanson, Jason Murphy and Given Harper\* and William Jaeckle\*  
Biology Department, Illinois Wesleyan University

Pores in avian eggshells facilitate gas exchange between the external environment and the embryo. We developed a novel approach for studying the three-dimensional morphology of eggshell pores using a polyurethane-based resin (PU4ii resin, VasQtech) typically used for creating molds of blood vessels. The resin was drawn through the pores of eggshell fragments using a vacuum and resin polymerization occurred within 24 hours at room temperature. The calcium carbonate components of the eggshell were dissolved with 10% hydrochloric acid, air-dried, and the remaining cast of the pore spaces was imaged using a JEOL-5800 scanning electron microscope. The dimensions of the pore spaces were determined from collected images using ImageJ software. Pores from eggshells of the domestic Chicken (*Gallus gallus*), Common Grackle (*Quiscalus quiscula*), and Brown-headed Cowbird (*Molothrus ater*) were successfully cast and imaged. Our results to date indicate that this technique is effective for determining pore shape and future work will focus on assessing the diversity of pore morphology among avian taxonomic groups.

Poster Presentation P54

**THE EFFECT OF BURNING ON SEED GERMINATION AND SEEDLING GROWTH RATES OF SULLIVANT'S MILKWEED (*ASCLEPIAS SULLIVANTII*) AND COMMON MILKWEED (*ASCLEPIAS SYRIACA*)**

Mary Nafziger and Given Harper\*  
Biology Department, Illinois Wesleyan University

Sullivant's milkweed (*Asclepias sullivantii*) (SM) and Common milkweed (*Asclepias syriaca*) (CM) are native Illinois plants that are often used in prairie restoration efforts. Before the seeds can be planted using traditional mechanical planters, the filamentous coma (i.e., silk-like ballooning material) must first be physically removed from each seed, which requires hours of tedious manual labor. A more expedient way to remove the comas is to burn them. However, the impacts of burning on seed germination and seedling growth rates are unknown, which was the purpose of my study. Germination rates from unburned CM seeds (0%) were significantly lower than that from burned CM seeds (20.8%;  $X^2_1 = 5.58$ ,  $p = 0.02$ ). There was no significant difference in germination rates of unburned (45.8%) and burned SM seeds (45.8%;  $X^2_1 = 0$ ,  $p = 1.0$ ). A two-way ANOVA indicated no significant main effects of treatment (burned or unburned) ( $F_{1,24} = 2.2$ ,  $p = 0.15$ ) or species ( $F_{1,24} = 0.28$ ,  $p = 0.60$ ) on milkweed growth rates. Therefore, burning the coma of milkweed seeds of both species is a more efficient way of processing before planting.



Poster Presentation P55

## **ALGORITHM VISUALIZATION**

Patrick Nevels and Mark Liffiton\*

Computer Science Department, Illinois Wesleyan University

Algorithm visualization is the visual representation of an algorithmic procedure or data structure. It has long been thought by computer science teachers that visualizing algorithms and data structures may lead to better knowledge acquisition in computer science education. However, many studies have been conducted regarding the effectiveness of algorithm visualization, and the results have been mixed. There appear, however, to be traits and features common among studies that have significant positive results. In general, studies that employed active learning, where the learner is mentally engaged with the visualization, often attain significant results. Additionally, studies that pair algorithm visualization with textual or verbal components, a practice known as dual-coding, often have significant results as well. We seek to collect and synthesize current research by looking at surveys and meta-studies of the field and extracting characteristics of algorithm visualization systems that have significant positive results. Our goal is to come up with a holistic view of algorithm visualization, including effective features and technologies for implementing visualizations that aid in learning algorithms.

Poster Presentation P57

**SNAPPED INTO FOCUS: ADDRESSING THE CHALLENGES FACED BY  
UNDOCUMENTED MEXICAN IMMIGRANTS IN THE UNITED STATES**

Nora Peterson and Rebecca Gearhart\*

Sociology and Anthropology Department, Illinois Wesleyan University

Utilizing collaborative research methods and visual media, this poster provides an insider's perspective of the experience of someone who has lived as an undocumented immigrant in the United States. Examined through the lens of Jennifer Carrillo, who immigrated to the United States with her family at the age of 10, this research focuses on the difficult process of immigration and the consequences for those who are unable to become legal residents. This poster also explores the moral responsibility felt by immigrants who have successfully navigated the immigration system to actively try to improve the status of undocumented immigrants in the United States.

Poster Presentation P58

**AN AMERICAN WHO EMIGRATED FROM POLAND:  
THE SIGNIFICANCE OF EDUCATION AND FAMILY SUPPORT  
IN THE ACCULTURATION PROCESS**

Stephanie Pierson and Rebecca Gearhart\*  
Sociology and Anthropology, Illinois Wesleyan University

By utilizing collaborative ethnography, photography, and research, this poster displays elements of the acculturation process of Polish immigrant and Illinois Wesleyan student, Justyna Gano. Through the use of collaborative visual methods such as the sharing and taking of photographs and interviews, this research provides insight into the life of a typical immigrant by highlighting the aspects of her life that she finds most important. By using photographs and sharing elements from her personal experiences, this poster examines the significance of education in Justyna's life, and how she views it as an invaluable opportunity and vital to achieving success. It additionally demonstrates the importance of Justyna's family support system and their influence in her acculturation process.

Poster Presentation P59

**VARIABILITY IN EGGSHELL PORE AREA IN RELATION TO BROOD HATCHING PATTERNS IN HOUSE WRENS (*TROGLODYTES AEDON*)**

Abbey White, Lauren Podgorski, and William Jaeckle\*<sup>1</sup>, Given Harper\*<sup>1</sup>, and Keith Bowers\*<sup>2</sup>

<sup>1</sup>Biology Department, Illinois Wesleyan University

<sup>2</sup>School of Biological Sciences, Illinois State University, Normal, IL

The House Wren (*Troglodytes aedon*) is a songbird that exhibits both synchronous and asynchronous hatching. Asynchronous hatching, which occurs when eggs within a clutch hatch two or more days apart, often results in a competitive advantage to the first-hatched nestlings. Two mechanisms by which asynchronous hatching occurs include the onset of incubation and variability in eggshell pore area. Larger eggshell pores would allow for increased gas exchange, which would result in faster development and earlier hatching. We tested the hypothesis that eggshell characteristics contribute to brood hatching patterns by counting and measuring pores from House Wren eggshells. If this hypothesis is correct, we predict that there should be differences in pore area between the first and last-laid eggs within clutches. Only one of twelve clutches (8.3%, N = 48 eggs, 1,502 fragments) showed significant differences in pore area between the first two and last two laid eggs. Given that approximately half of broods in this House Wren population hatch asynchronously, we did not support our hypothesis that eggshell pore area influences brood hatching patterns.

Poster Presentation P60

**BECOMING AMERICAN: A VISUAL ETHNOGRAPHIC EXAMINATION  
OF IMMIGRANT AMERICAN IDENTITY**

Jacob Roy and Rebecca Gearhart\*

Sociology and Anthropology Department, Illinois Wesleyan University

Through the use of collaborative ethnography and photography, this poster provides insight into Dr. Adrianna Ponce's identity as an immigrant American. Incorporating photographs into the research process helped to facilitate interviewing, and allowed Dr. Ponce to assist in determining the most significant elements of her life. This poster visually examines the role that education has played in her decision to come to, and remain in, the United States. It additionally examines the difficulty she has experienced in integrating herself into a community within this country, and the role she plays in teaching her son about his multi-cultural heritage.

Poster Presentation P61

**ADDRESSING THE ELEPHANT IN THE ROOM:  
UNDERSTANDING THE DAILY LIFE OF UNDOCUMENTED  
HIGH SCHOOL YOUTH**

Sylvia Rusin and Meghan Burke\*

Sociology and Anthropology Department, Illinois Wesleyan University

The 1.5 generation are the undocumented students who were born abroad and were brought to the United States by their parents at an early age. Many of these children came here during the population boom in the 1990's and are now teenagers or in their mid 20's. As they are finishing high school, nearly all of them are confused about their post-secondary options because of their undocumented status. The IL Dream Act, passed in 2011, qualifies undocumented youth to pay in-state tuition when attending public universities in Illinois and provides counselors who are aware of the college options and post-secondary resources for undocumented youth. However, research shows that counselors are still confused and unaware of the resources for their undocumented students, and the struggles of their daily lives. This study intends to discover what school staff actually know about the every day life of their undocumented students and what kinds of post-secondary resources are being recommended to this unique group of students. This is Sylvia Rusin's honors research project.

Poster Presentation P62

## **IMPEDANCE-ASSISTED AMPEROMETRY AND VOLTAMMETRY FOR BIOLOGICAL APPLICATIONS**

Jennifer Schreiber and Melinda Baur\*

Chemistry Department, Illinois Wesleyan University

AC impedance was used at carbon fiber microelectrodes to assist in making electrochemical measurements in biological systems. A high frequency sine wave (100 kHz, 20 mV rms) was added to the potential applied for amperometry or voltammetry, and the amplitude of the resultant AC current was measured with a lock-in amplifier. This amplitude is inversely proportional to the solution impedance close to the carbon fiber electrode. The AC signal can be recorded simultaneously with the faradaic current, and requires no electrode modifications. We have found that such measurements are invaluable for reproducibly positioning the electrode close to single cells and close to the surfaces of isolated tissues. The AC signal is also useful for confirming that stimulant solution ejected from a micropipette reaches the electrode vicinity. Furthermore, we have detected small changes in ionic strength during exocytosis that are independent of the redox reactions occurring at the surface of the electrode. Minimal hardware, consisting of only a modified pre-amplifier and a lock-in amplifier, is required to add this capability to conventional electrochemical instrumentation.

Poster Presentation P63

**THE QUEST FOR IDENTITY AND BELONGING:  
DON QUIXOTE AND ITS RELATION TO THE BIRACIAL EXPERIENCE**

Olivia Semeria and Carolyn Nadeau\*  
Hispanic Studies Department, Illinois Wesleyan University

In Miguel de Cervantes' novel, the character Alonso Quijano struggles to identify as a hidalgo and attempts to become his ideal when he transforms into a knight named Don Quijote. Four hundred years later, many biracial Americans experience the same struggle with racial identification and group belonging. Both Don Quijote and biracial individuals face the difficulty of deciding how to interact with the very society that created their sentiments of polarization. This paper investigates the ways in which Don Quijote and biracial Americans define themselves, get defined by others, and attempt to identify with their ideal group or groups. (In Spanish)



Poster Presentation P64

## **EFFECTS OF DISCLOSING AUTISM ON COWORKER ATTITUDES**

Jordan Stewart and Linda Kunce\*

Psychology Department, Illinois Wesleyan University

Individuals with autism tend to have difficulty with social relationships in the workplace, which makes it difficult to obtain and maintain employment. In order to help individuals with autism navigate the workplace, it is important to examine possible stigma management strategies. Using principles from the Stereotype Content Model (SCM) theory, I investigated the effects of disclosing autism on coworker attitudes by having participants view and react to a video of an actor portraying an individual with autism. I also investigated the effects of displayed interpersonal warmth (e.g., greeting others) on potential coworker attitudes. Participants were randomly assigned to one of four conditions formed by the presence or absence of autism spectrum disorder (ASD) disclosure and the presence or absence of interpersonal warmth. After viewing the videos, the participants completed several measures to assess their judgments, emotional reactions, and behavioral intentions towards the individual with ASD. Disclosure had a stronger and more positive impact on the participants' reactions and attitudes toward the trainee compared to the interpersonal warmth behaviors. When ASD was disclosed, participants perceived the individual as more warm and competent, felt more admiration and less irritation toward him, were more likely to help and associate with him, and were more willing to work with him.

Poster Presentation P65

## **A COMPARISON BETWEEN DIRECT AND INDIRECT ESTIMATES OF GAS FLUX ACROSS AVIAN EGGSHELLS**

Sarah Takushi and William Jaeckle\*

Biology Department, Illinois Wesleyan University

Gas exchange through pores in bird eggshells is necessary for normal embryonic development. Porosity of eggshells varies among species and among eggshell regions within species. Portugal et al. (2010) modified a method developed by Booth and Seymour (1987) to measure rates of gas exchange through eggshell fragments. We evaluated and subsequently modified this method to more accurately measure gas flux through eggshell pores using the eggs of the Brown-headed Cowbird (*Molothrus ater*). Correcting for gas movement around the eggshell showed that unchecked replicates overestimated the apparent gas flux by, on average, 50% (range: 0-620%). The presence of the internal shell membrane had no detectable effect on measured rates of gas flux ( $t_{(0.05, 54)} = 0.261$ ,  $p = 0.795$ ). We compared measured rates of gas flux to predicted rates of gas flux (calculated from measurements of total pore area per fragment) and found no correlation ( $r_{(0.05, 54)} = 0.189$ ,  $p = 0.174$ ). We hypothesize that this discrepancy is explained by the presence of organic matter within the pores which makes them undetectable using light microscopy. These results imply that indirect estimates of gas flux made using measurements of porosity may misrepresent the actual gas flux through avian eggshells.

Poster Presentation P66

## **EFFECTS OF DISCLOSURE OF AN AUTISM SPECTRUM DISORDER ON COWORKER ATTITUDES**

Chelsea Werries and Linda Kunce\*

Psychology Department, Illinois Wesleyan University

Individuals with autism spectrum disorders (ASDs) have been known to struggle with attaining and maintaining employment. The stigma of ASDs plays a large role in this struggle, and research on stigma management strategies in the workplace is needed. I investigated the effects of two specific strategies, self-disclosure of an ASD and interpersonal warmth behaviors (i.e., asking others questions about their interests), on coworker attitudes. In this experiment, I used video stimuli to show participants an individual portraying a person with ASD interacting with coworkers. Participants were randomly assigned to one of four conditions, featuring 1) the presence or absence of self-disclosure and 2) the presence or absence of interpersonal warmth from an individual with ASD depicted in a video. Participants then completed questionnaires to capture several dimensions of their attitudes toward the individual. Results demonstrated significant main effects for disclosure on perceptions of an individual with ASD. Self-disclosure resulted in higher ratings of his warmth and competence, higher admiration for him, less irritation towards him, and greater intentions to help and associate with him. Participants also reported more willingness to work with an individual with ASD who disclosed than with an individual who did not. There were no significant main effects for interpersonal warmth on perceptions of the individual with ASD.

Poster Presentation P67

## **MULTIFIBER ELECTRODES FOR THE DIRECT DETECTION OF NEUROTRANSMITTER RELEASE FROM TASTE BUDS**

Stephen R. Whitfield and Melinda Baur\*  
Chemistry Department, Illinois Wesleyan University

Mammalian taste buds are known to contain releasable stores of norepinephrine (NE) and serotonin (5-HT), both of which are electroactive neurotransmitters amenable to detection by amperometry and cyclic voltammetry. However, repeated attempts to detect the release of NE and 5-HT in isolated mouse taste buds (approx. width of 50-70  $\mu\text{m}$ ) with single carbon fiber electrodes have been unsuccessful. The taste bud is a tight collection of 50 to 100 taste cells, only about 20 percent of which contain NE and 5-HT, and therefore the probability of positioning a single carbon fiber electrode (5-7  $\mu\text{m}$  in diameter) at a release site is very low. We have found that it is possible to greatly increase the probability of finding release sites using carbon fiber electrodes containing approximately 10 to 40 carbon fibers, each having a diameter of 7  $\mu\text{m}$ . These multifiber electrodes have overall diameters between 30 and 70  $\mu\text{m}$  (including the glass insulating sheath) and therefore cover between 50 and 100% of the exposed surface of the taste bud. It was possible to use amperometry at these electrodes to directly detect calcium-dependent vesicular release of neurotransmitter by depolarization with KCl and by stimulation with sweet, sour, and bitter tastants. Furthermore, we have used this approach to demonstrate that mouse taste buds release neurotransmitters in response to stimulation by linoleic acid. These results demonstrate that multifiber electrodes promise to be important tools for investigating the sense of taste and the mechanism of neurotransmission between taste cells and between the taste buds and the afferent neuron.

**EDUCATIONAL STUDIES POSTERS - ES**

**9:00 – 10:00 a.m.**

or

**11:00 – 12:00 noon**

Lower Level – Ames Library

**EDUCATIONAL STUDIES ORAL PRESENTATION – O15.1**

**10:00 a.m.**

Poster Presentation ES

## **CONNECTIONS AND REFLECTIONS: EXAMINING A STRUCTURED, SOCIALIZED CURRICULUM IN A KINDERGARTEN CLASSROOM**

Elise Anderson and Jeanne Koehler\*

Educational Studies Department, Illinois Wesleyan University

One challenge to creating a safe learning environment in the classroom is deciding how to implement classroom management strategies that support the diverse student population. In order to face this challenge, teachers must steer away from prescribed methods of behavior management and focus on individual student needs. This study investigates the benefits and downfalls of behavior management systems, and the ways in which these programs affect the formation of student identities in the classroom. Examples of behavior management materials as well as extensive field notes were collected to inform the study. The findings indicate scripted behavior management plans undermine teacher and student relationships and point to the importance of teachers understanding individual student needs and finding what works best for them. Further research would help to explore alternative methods to rewards and punishment systems that foster relationships and encourage a student-centered approach to creating a classroom environment.

Poster Presentation ES

## **MILITARY BRATS: WHAT DO TEACHERS NEED TO KNOW?**

Hillary Anderson and William Summer Seiki\*  
Educational Studies Department, Illinois Wesleyan University

There are two million military connected children, and every school district in the United States has at least one military connected student (Operation Educate the Educator, n.d.). This study attempts to answer the question “What do classroom teachers need to know in order to understand their military connected students?” In order to answer that question, five topics of military life are examined: moving; parental deployment; alcoholism, abuse and Post Traumatic Stress Disorder; military culture; and children of reservists and national guardsmen. The method of exploring these topics is to analyze and synthesize ten academic articles, along with other sources, such as interviews with adult military brats. The implications of this study indicate that there is a lack of academic knowledge on military children.

Poster Presentation ES

**THE EFFECTS OF ATHLETIC PARTICIPATION ON  
ACADEMIC PERFORMANCE AND CHARACTER DEVELOPMENT**

Michelle Bilek and Sumer Seiki\*

Educational Studies Department, Illinois Wesleyan University

Athletic participation has been found to have an immense impact on the academic achievement and character development of youth. With such a large number of students partaking in athletics today, knowing the effects of that participation is crucial in order to help young people develop into successful and contributing members of society. This literature review compiles ten valid, relevant, and current empirical articles from online databases. The results indicate that athletic participation has a positive impact on one's educational success because of increased involvement with the school and its personnel. In addition, higher levels of personal development were achieved among student-athletes. These findings identify several benefits of athletic participation, which can assist teachers, coaches, and administrators in helping students achieve their full potential.



Poster Presentation ES

## **FINDING THE DRIVE: MOTIVATING SPECIAL EDUCATION STUDENTS TO READ IN THE HIGH SCHOOL ENGLISH CLASSROOM**

Jessica Brewer and Jeanne Koehler\*

Educational Studies Department, Illinois Wesleyan University

Although tracking in public high schools is touted as an approach that caters to the needs of the students, students in lower-level courses continue to face a wide gap between actual literacy and expected literacy for students in their grade. Lack of student motivation has been identified as one of the contributing factors. Teachers dedicated to improving student literacy, it has been argued, can create classroom environments that foster intrinsic motivation to promote higher student achievement and literacy levels. This paper investigates different factors that were affecting student motivation in a high school, low-level English classroom. This study was completed using a qualitative self-study approach that includes data from field notes, student work samples, and student feedback. The findings of this study indicate that positive student-teacher relationships help foster student interest in the material and encourage the students to take academic risks intended to develop their literacy skills.

Poster Presentation ES

## **IMPROVING LANGUAGE COMPREHENSION IN THE FRENCH CLASSROOM: THE ROLE OF ACTIVE LEARNING STRATEGIES**

Samantha Calhoun and Jeanne Koehler\*

Educational Studies Department, Illinois Wesleyan University

Foreign language classes are all too often a practice in rote memorization exercises. Research has shown that rote exercises are not the most effective method for learning a foreign language or improving students' reading comprehension. Active learning strategy research argues for having more hands-on, project-based opportunities that increase student learning outcomes. As a high school French student teacher, I sought to find ways to implement active learning strategies to aid students' reading comprehension. This self-study was completed using a qualitative approach and included data from field notes, projects, student feedback, and student grades. The findings indicate that targeted active learning strategies such as games, activities, and projects, used in partnership with one another, did result in improved student performance on reading comprehension assessments. This study will add to the body of knowledge which promote active learning strategies and will hopefully encourage further research of these methods.

Poster Presentation ES

## **TYPES OF MOTIVATION AND FOSTERING STUDENT INDEPENDENCE**

DeAnna Carter and Robin Leavitt\* and Jeanne Koehler\*  
Educational Studies Department, Illinois Wesleyan University

One common goal of elementary school teachers is to help their students become independent learners. A way to foster student independence is to pay attention to intrinsic and extrinsic motivational factors that affect school success. This study examines types of student motivation and the relation between academic achievement and independence. This study was completed using a qualitative self-study approach and included varying data collection methods such as field notes, informal discussions with students, and student work. Planning lessons tailored to students in order to increase certain types of motivation has been found to increase student independence and success. The findings suggest that the outcome of fostering student independence is well worth the effort. However, more research needs to be done on how to do so.

Poster Presentation ES

## **FOSTERING A POSITIVE AND COLLABORATIVE CLASSROOM COMMUNITY IN THE ELEMENTARY CLASSROOM**

Caitlin Collins and Robin Leavitt\* and Jeanne Koehler\*  
Educational Studies Department, Illinois Wesleyan University

Students typically seek a sense of belonging within their elementary classrooms. Increasing diversity and academic demands on students means teachers need to find new ways to create an inclusive and positive classroom community. Building teacher affiliation with students, using technology, and providing opportunities for collaboration may be useful in promoting a sense of community. This paper explores the effects of teacher affiliation, technology, and collaboration in fostering community, as well as potential struggles that may arise in the process. This study uses a qualitative self-study approach, and the data includes field notes and student feedback. The findings give credence to the use of close teacher affiliation, collaborative technologies, and increased collaborative opportunities as potential methods to increase a sense of community in the classroom. This study encourages further exploration into methods for creating positive classroom communities.

Poster Presentation ES

## **BENEFITS OF INCORPORATING PRIMARY SOURCES IN THE SECONDARY HISTORY CLASSROOM**

Emma Craig and Jeanne Koehler\*

Educational Studies Department, Illinois Wesleyan University

In many history classes, students encounter the past through assigned textbooks. The emphasis is on memorizing details and not building critical thinking skills. With the new common core standards, there is an emphasis on building students' content literacy. Incorporating primary sources in the secondary history classroom has shown to be an effective way to get students engaged in history while also fostering their critical thinking. Within this study, I incorporated primary sources into a secondary history classroom. These primary sources offered alternative perspectives on historical events, and students were encouraged to analyze the sources and form their own perspectives. This study was completed in an American History class and included the collection of data through field notes and student work. The findings suggest primary sources are a beneficial addition to the history classroom, encourage critical thinking, and align with the Common Core State Standards.

Poster Presentation ES

## **TEACHING SOCIAL JUSTICE THROUGH CHILDREN'S LITERATURE**

Hillary Davis and Jeanne Koehler\* and Robin Leavitt\*  
Educational Studies Department, Illinois Wesleyan University

Teaching social justice in an elementary classroom prepares students to become accepting and respectful citizens in our society. Some teachers avoid social justice topics in their lessons, believing that younger children are not ready for such meaningful discussions. Children's literature is one way to discuss these topics in developmentally appropriate ways. This study uses a qualitative self study approach to explore how children's literature can be used to cover difficult social issues in an elementary classroom. Data collection methods include field notes, student work, lesson plans, and student's quotes. The findings provide support for fostering critical thinking and meaningful discussion through children's literature on social justice. Students enjoyed learning about social justice topics and being exposed to the world. This study suggests that using children's books is a useful way to cover social justice topics so that children better understand societal issues and are able to discuss within the classroom.

Poster Presentation ES

## **ADAPTING THE MANDATED MATH CURRICULUM IN AN ENGAGING WAY TO BEST PROMOTE STUDENTS' LEARNING**

Rosaleen Egan and Jeanne Koehler

Educational Studies Department, Illinois Wesleyan University

Prior research suggests teachers should be more prepared to engage students in mathematics. Engaging students in mathematics can be a difficult task for teachers, especially when they need to adapt to and incorporate the Common Core State Standards. Games and other engaging and content-based activities can be useful in increasing students' interest in and understanding of mathematical concepts. This paper examines the usefulness of such activities and how they fit into the Common Core curriculum. This study was completed using a qualitative self-study approach and included varying data collection methods, including field notes, SmartNotebook activities, and informal student feedback. Findings indicate that activities with specific, content-based objectives can be used to increase students' motivation and thus, increase their comprehension of the topics. Additionally, non-word based activities can also be helpful for students with low reading proficiency.

Poster Presentation ES

## **EMERGING WRITERS LEARN TO REVISE AND EDIT**

Elizabeth Exo and Jeanne Koehler\* and Robin Leavitt\*  
Educational Studies Department, Illinois Wesleyan University

Writing instruction at the early elementary-level has often been reduced to one-size-fits-all prompts, which encourage limited student engagement or creativity. In response to this, many elementary classrooms have seen a push for workshop models that teach students to think of writing as a process. Through a modified Writers' Workshop model, this study investigates first grade students and their journey through the revising and editing stages of the process. This three month study includes qualitative data collection methods such as field notes and student work samples. The findings of this study suggest that although revising and editing may seem a daunting task for emerging writers, a combination of explicit group lessons, peer conferencing, and checklists can guide students to look at their own writing with a more critical eye. These results suggest the importance of providing writing instruction that allows for more student involvement and peer interaction.



Poster Presentation ES

**OVERREPRESENTED IN SPECIAL EDUCATION:  
MINORITY STUDENTS AT RISK**

Caitlin Garrison and Sumer Seiki\*

Educational Studies Department, Illinois Wesleyan University

Over the past forty years, overrepresentation of minority students in special education has been studied and prevalent in the school system. Though it has been examined for a while, there are still significant amounts of disproportionality in special education in the United States, today. To ensure that all students are given equal access to the most beneficial school setting, addressing the variety of factors that cause racial disproportionality in special education is key to each student's success. Through my analysis of peer reviewed research studies, I have focused this literature review on illustrating the racial groups most affected by disproportionality, factors leading to disproportionate representation, and possible solutions to fix the inequality. With this information, present and future school personnel involved in the referral of students to special education can improve the statistics to ensure that overrepresentation is not present and provide each student with an education that yields success.

Poster Presentation ES

**HARRY POTTER AND THE LITERACY CLASSROOM:  
THE IMPORTANCE AND INFLUENCE OF STUDENT CHOICE**

Melissa Graffy and Jeanne Koehler\*

Educational Studies Department, Illinois Wesleyan University

In many classrooms, students learn to read through assigned classroom texts that are often disconnected from student interest. In these classrooms, students love for reading is not a priority. Incorporating student choice into the classroom allows educators to foster positive relationships between their students and reading, while exploring literacy concepts on an individual level. This paper investigates student choice in a literacy classroom, explores what influences students' choices, and identifies potential conflicts between student chosen texts and expected classroom assignments. This study was completed using a qualitative self-study approach and included data collection methods, such as field notes, informal classroom discussions, and student work. The findings indicate that the students enjoyed the ability to chose what they were reading, that peers and book availability played a large part in the selection process, and that a classroom could utilize a variety of student choice options to cover the required material.

Poster Presentation ES

## **EFFECTIVE INTERVENTION STRATEGIES FOR REDUCING BULLYING IN SCHOOLS**

Cory Grapenthien and Sumer Seiki\*

Educational Studies Department, Illinois Wesleyan University

Bullying has been in the global spotlight in recent years due to an increase in the prevalence of reported situations in schools (Kennedy, Russom, Kevorkian, 2012). The current study examines this increase of situations, specifically focusing on grades 6-12. More schools are beginning to recognize the need for successful bullying prevention programs, and this study aims to compile successful strategies that schools can utilize to reduce bullying situations. This research recognizes two main types of strategies, student based and faculty and staff based programs. It has been found that a combination of different strategies, which include participation of students and faculty and staff, as well as successful and well-planned implementation of a prevention program, may help reduce bullying situations. This information is helpful for schools to utilize when implementing anti-bullying programs.

Poster Presentation ES

## **BALANCING THE FLIP: TECHNOLOGY IN THE HIGH SCHOOL MATH CLASSROOM**

Philip Johnson and Jeanne Koehler\*

Educational Studies Department, Illinois Wesleyan University

With the standardizing of the curriculum, it has become progressively more difficult to create an explorative and interactive atmosphere in the classroom. School districts and teachers are beginning to explore how technology can be used to create more dynamic learning opportunities after school. This article explores the benefits of technology within a high school mathematics classroom. This study included a flipped classroom approach and an after school technology activity. Data for each technique was drawn from lessons created for an AP Calculus class and a College Algebra class respectively, and includes lesson plans and resources, self-made materials, student opinions, and field notes. The findings of this investigation seem to indicate that technology can be extremely useful for after school learning, with the stipulation that the technology and activity match the learning goals and objectives.

Poster Presentation ES

**TRANSITIONING TO INFORMATIONAL TEXTS:  
EXPLORING INFORMATIONAL TEXT COMPREHENSION IN  
UPPER ELEMENTARY**

Amanda Knezovich and Jeanne Koehler\*

Educational Studies Department, Illinois Wesleyan University

When considering the information world that surrounds us, the importance of children comprehending and analyzing informational texts has significance. By providing students with exposure to informational texts and encouraging reading comprehension, students will gain a greater understanding for the world around them and increase their comprehension skills. This paper explores introducing a variety of informational texts and skills within a fifth grade classroom. This study was completed using qualitative self-study approach that included varying data collection methods, such as field notes, informal classroom discussions, and student work. The findings show the benefits of including informational text and embedding comprehension skill development within the classroom, and these findings can apply across the curriculum to include science.

Poster Presentation ES

## **TEACHER IMMEDIACY**

Daniel LaRocca and Sumer Seiki\*

Educational Studies Department, Illinois Wesleyan University

Actively engaging students within the classroom is one of the most challenging aspects of the classroom environment. Behaviors that depict an instructor as relatable and understandable can have positive effects upon student engagement in class. An instructor acting with these types of behaviors is said to have teacher immediacy. The desired outcomes connected to teacher immediacy are effective increases in a student's learning and motivation. The research lacks a conclusive evidence of a direct link between immediacy and student progression, however, an instructor's awareness of proper immediate behaviors has shown to have a positive effect on a student's perception of their relationships with teachers. Through a comprehensive study of teacher action research, case studies, and survey research over the past decade, this paper delves into the correlation between immediate behavior and student progress.

Poster Presentation ES

## **DIVING INTO THE DIGITAL AGE: BLOGGING AS A LEARNING EXPERIENCE**

Andrea Lenz and Jeanne Koehler\*

Educational Studies Department, Illinois Wesleyan University

The 21st century is a technologically advanced time period in which many forms of communication exist. New technologies provide new spaces for student communication. As teachers, we can combine the 21st century communication skill development into the classroom. This study analyzes the implementation of blogging into a 4th grade classroom. The study covers the curriculum cycle of planning, implementing, and evaluating student use of blogging. The results of the study indicate that blogging was a positive learning activity for students, helped to embed technology into teaching, as well as allows students to engage in learning through the use of technology.

Poster Presentation ES

**GIVING STUDENTS A VOICE IN THE GRADING PROCESS**

Scott Meyers and Summer Seiki\*

Educational Studies Department, Illinois Wesleyan University

Throughout a student's academic career a strong emphasis is placed on grades. Because of this students are often pressured to perform to standards and expectations created by the teacher. Through implementing contract grading, a more democratic approach to grading, students and teachers co-create a tentative syllabus and evaluation system. This study examines the positive and negative effects of contract grading implemented at the undergraduate level through analysis of case studies and teacher action research studies. Special attention is given to how contract grading affects a student's academic performance, how a more student-centered classroom influences teacher-student relationships, and how this approach can be applied to a high school classroom since little research has been carried out at the high school level.



Poster Presentation ES

## **TEACHER IMMEDIACY IN A SECONDARY SCIENCE CLASSROOM**

Nathaniel Nesbit and Jeanne Koehler\*

Educational Studies Department, Illinois Wesleyan University

Teacher Immediacy describes a set of skills for, or an attitude towards, reducing the perceived distance between students and instructors. This perceived distance is important both in the interactions between students and the instructors and the interaction between the students and the content area. Utilizing teacher immediacy within the classroom is important across all content areas, but it is especially important in science classrooms. Unlike other subjects, students usually enter a science classroom with almost no previous knowledge of the content. This causes an immediate divide between student and instructor due to the vastly disparate level of comfort with the subject. The purpose of my research was to look at how utilizing these skills in the classroom can improve student performance and engagement in a physics classroom. I spent time as a pre-service teacher in a local high school doing personal research as well as looking at the results and ruminations of previous researchers within the topic. Looking forward I would like to try out these skills in my own classroom with a larger sample group to more accurately represent trends between specific skills and the students' performance and engagement within the classroom.

Poster Presentation ES

## **READERS' WORKSHOP CONFERENCES: FOSTERING RELATIONSHIPS AND READING ABILITY**

Ashley Nykolajiszny-DeSantis and Jeanne Koehler\*  
Educational Studies Department, Illinois Wesleyan University

The ability to support each student's individual reading development in an elementary classroom is a challenge faced by educators. Implementing a Readers' Workshop model enables teachers to work one-on-one with students during student-teacher conferences to individualize instruction. This study investigates how student-teacher conferences aid reading development and foster relationships among the teacher and students. This study was completed using a qualitative self-study approach and included varying data collection methods such as field notes and conference forms. The findings indicate that student-teacher conferences during Readers' Workshop allow for the differentiation of instruction, however, gains in reading ability were not necessarily observed. Additionally, a relationship was fostered between students and the teacher through the one-on-one interaction. Larger implications of this study suggest that Readers' Workshop is effective for meeting the needs of diverse learners and creates strong teacher-student relationships. This study encourages further exploration of how to develop students' reading ability.

Poster Presentation ES

**COMPARING THE IMPLEMENTATION OF SOCIAL AND  
EMOTIONAL LEARNING PROGRAMS AND THE EFFECTS  
ON ACADEMIC ACHIEVEMENT**

BetsyAnne Pacey and Summer Seiki\*

Educational Studies Department, Illinois Wesleyan University

Social and emotional learning (SEL) has become a growing phenomenon in the educational field ever since emotional intelligence was connected to IQ (Elias and Moceris, 2012). Past research revealed that 60% of children entering kindergarten have the necessary cognitive skills needed to succeed while only 40% have the necessary emotional competencies needed to succeed (Ashdown and Bernard, 2011). Many schools are now implementing social and emotional learning programs to help further students' social-emotional competencies. This study investigated the effects of SEL programs on students' academic achievement and reveals several positive relationships between the two. The second part of the study focused on components of successful SEL programs revealing that how the program is implemented can greatly affect the outcome. These findings add to previous research in the field of SEL while also providing educators with information on how to improve the educational experience for students through SEL programs.

Poster Presentation ES

## **THE TREATMENT OF ANXIETY IN A SCHOOL SETTING**

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Anxiety is a prevalent disorder among school-aged children. Many of these children are not identified and suffer in silence. Anxiety that is left untreated in childhood can lead to other disorders later in life such as depression. Early identification and intervention is essential to ensure student success in school setting and prevent other complications. Currently, cognitive behavioral therapy as a treatment for anxiety in school-aged children has been used successfully in a clinical setting. As a result, researchers have been developing and conducting clinical trials of cognitive based treatment approaches to use in a school setting. Current programs designed for the treatment of anxiety that can be applied to a school setting will be explored in this literature review. Programs that take place during the period of a child's life where anxiety is most prevalent; have the greatest potential for the successful treatment of childhood anxiety disorders.

Poster Presentation ES

## **PERCEPTIONS OF GENDER IN A FOURTH GRADE CLASSROOM**

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Embedded concepts of gender influence student language and may prevent students from thinking outside of personal biases. Teachers have the opportunity to open up spaces for students to explore perceptions of gender through literature. Through small group discussion framed by children's literature, I attempted to encourage students to examine their own understandings of gender and create an atmosphere of respect and acceptance. This self-study included data collection through field notes, formal and informal discussion, and audio recordings of small-group discussion. The findings of this study indicate differences between students' ideas of gender in peer-to-peer conversation and in formal, teacher-led discussion. Students demonstrated an awareness of gender roles within children's literature but not the implications of gender in the classroom. This study suggest that small-group discussion with students provides opportunities for teachers to incorporate meaningful discussion about gender issues and additional gender research is warranted focused on peer-to-peer interactions.

Poster Presentation ES

## **BUILDING BRIDGES: ANALOGIES AND MEDIA IN THE SECONDARY MATHEMATICS CLASSROOM**

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Students enrolled in high school mathematics courses are there to complete graduation requirements and not because of an interest in the subject matter. When students are asked about math, one hears terms such as “boring,” “uninteresting,” and “hard.” As a new math teacher, increasing student engagement is critical to successful teaching. Analogies and social media within everyday lessons is one approach to connect mathematical concepts to students’ lives. With this qualitative self-study, I explored how to incorporate analogies and social media into the mathematics classroom and how students responded. Data for this paper was collected in an Algebra II classroom using field notes, test comparisons, and student reflections. The findings indicate incorporating analogies and social media in the classroom keeps students engaged longer and increases their participation. This study supports creating connections between mathematics and student interest and prior knowledge in order to increase student engagement

Poster Presentation ES

## **THE IMPACT OF DIETARY CHOICES ON STUDENT ACHIEVEMENT IN ADOLESCENTS**

Lauren Rock and Sumer Seiki\*

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Dietary choices and preferences are important topics as it relates the influences nutrition has on long-term physical and cognitive development in adolescents. This research project is a compilation of peer-reviewed research studies in education and nutrition that highlight the value of the consumption of balanced meals as it relates to the cognitive performance and academic attentiveness of adolescents ages 6-17. Case studies and data analysis studies examined in this project agree that adolescents' dietary choices and preferences are most significantly impacted through Family Influence and Societal Norms, Nutrition Education/Intervention, School Programs/Clubs, and Dietary Quality. This research contributes to the growth of studies that focus on the importance of nutrition education and food choices of adolescents as they provide the majority of daily nutrients most important for academic success.

Poster Presentation ES

## **KINDERGARTEN TRANSITION PROGRAMS**

Ellie Savage and Sumer Seiki\*

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The move to kindergarten from early-childhood education is a difficult transition. Students are faced with new routines, new curriculum, new people and new environments which present many challenges. My study of peer reviewed articles examines different transitional practices schools across the globe use to prepare children for kindergarten as well as the perspectives of parents and teachers on their school's transitional programs. Both parents and teachers find that high-intensity transitional programs are the most beneficial; however, they are the least common. With the information gathered from my study, teachers and schools will be able to develop their own successful, research based transition programs.



Poster Presentation ES

## **TARGET LANGUAGE CULTURAL MATERIALS IN THE SPANISH CLASSROOM**

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When students enroll in a foreign language in high school, many see the course as an elective or requirement for college entrance. Getting students to see the significance of the language is a challenge. To build a bridge, realia offers students the opportunity to view the target language as meaningful and significant. This paper investigates the use of media, a form of realia, in high school Spanish classrooms as a way to motivate students, connect target language to prior knowledge, and increase the importance of language acquisition. Data for this collaborative, qualitative study was collected in two different Spanish classrooms within two different schools. Data sources include classroom discussions, worksheets, field notes, and reflections on daily activities. Findings indicate realia is a useful tool to encourage student interest in learning Spanish. The hope is that this interest might carry over to a lengthened pursuit of language learning.

Poster Presentation ES

## **INCORPORATING MULTIPLE INTELLIGENCES INTO THE CLASSROOM: AN ATTEMPT TO ENGAGE STUDENTS IN LEARNING**

Sejal Soni and Jeanne Koehler\*

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When walking into an elementary classroom, you may see a teacher lecturing, some students sitting passively, and others struggling to pay attention. What you may not see is students actively engaged in the lesson. One way to improve student engagement in learning is to incorporate students' multiple intelligences in the classroom. Multiple intelligences provide a framework for building various classroom activities. This qualitative study looks at how student engagement changes when the seven multiple intelligences identified by Gardner (1983) are incorporated into lessons (primarily science lessons). The study uses various data collection methods such as field notes and student work. The findings of this study indicate that students are more engaged in their learning when multiple intelligences are incorporated into the lessons. This study supports incorporating multiple intelligences in the classroom and further research in multiple intelligences and the connection with student engagement.

Poster Presentation ES

**DISILLUSIONMENT OF DIFFERENTIATION:  
JUMPING OFF THE DIFFERENTIATION BANDWAGON**

Emily Susin and Jeanne Koehler\*

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Teacher preparation programs and educational courses recommend differentiation as an effective teaching practice. Tomlinson (2000) defines differentiation as “tailoring instruction to meet individual needs.” With such a broad definition, there are a variety of ways a teacher can differentiate. With support for differentiation growing, some administrators are requiring teachers to differentiate in the classroom. This study explores the challenges I faced when preparing and implementing differentiation in a Geometry classroom as well as the student perspectives on differentiation. Due to the variety of ways to differentiate, this study focuses strictly on differentiating homework assignments based on student interest. Data sources included field notes, interest questionnaires, student work, student questionnaires, and reflections. While education coursework encourages the practice of differentiation in the classroom, the findings of this study calls into question some of the basic assumptions behind differentiation and questions the return on investment of teacher time.

Poster Presentation ES

**MAKING THE ABSTRACT CONCRETE: AN EFFECTIVE AND  
ENGAGING APPROACH TO INTRODUCING ADDITION TO  
KINDERGARTEN STUDENTS**

Lauren Venlos and Robin Leavitt\* and Jeanne Koehler  
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Diverse learners in today's classrooms require differentiated instruction in content areas. In math, differentiated instruction can be implemented through the use of manipulatives. Research has shown a correlation between student performance and the use of manipulatives. In this study, a series of student-centered math small group and whole class lessons were developed that emphasized manipulatives in kindergarten learning. This study explores student progression from number recognition to the introduction of algorithmic expressions. The goal was to implement manipulatives and authentic learning experiences through a learning segment. In evaluating my learning opportunities, student work, anecdotal field notes, and assessments, Manipulatives provided avenues for small group instruction, differentiating instruction, and one-on-one conference time. The results indicate the usefulness of manipulatives and small group instruction for each student.

Poster Presentation ES

## **SINGLE-PARENT HOUSEHOLDS AND EDUCATIONAL ACHIEVEMENT**

Ethan Wood and Summer Seiki\*

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Nearly half of all marriages in the United States ends in divorce. A consequence of this fact is that children are left living in a home with a single custodial parent. Prior research suggests that coming from a single-parent family affects a child's academic achievement. The studies reviewed utilized quantitative empirical data in order to study the effects of a variety of factors on children's academic success within a single-parent family. This review comes to the ultimate conclusion that of all the myriad factors that could influence a child's academic success within the lens of a single-parent family, socio-economic status is far and above the most significant.

Oral Presentation O15.1

## **SPACES FOR HISTORY IN THE SECONDARY MATHEMATICS CLASSROOM**

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Teachers committed to issues of social justice actively search for ways to infuse multicultural perspectives into lessons and the classroom. As a pre-service mathematics teacher, I realized the value in looking outside the numbers and symbols to investigate the culture of historical math perspectives. With this study, I incorporated math history into the curriculum and explored student interest and motivation as it related to the integration of history. Data included student designed presentations, individual evaluations, and content-based assessments. The findings of this study point to the need for continued study of interdisciplinary classroom atmospheres as well as student interest when integrating topics.