19th Annual

Thursday, October 25, 2018

Faculty/Staff Research & Creativity Fall Forum

Houston Gym
Poster Presentation from 11:00 a.m.–1:30 p.m.
Welcoming Remarks at 12:30 p.m.
http://library.buffalostate.edu/fallforum
Mission Statement
The mission of the Buffalo State Research and Creativity Network Spring and Fall Forums is to develop, encourage, and support Buffalo State faculty and staff research and creativity and make collaborative research endeavors and grantsmanship more accessible.

Research Mentoring Interest
Mentoring is an excellent way to gain or give additional knowledge and experience.

We are building a database of individuals who would be interested in mentoring or being mentored in areas that will strengthen skills in proposal development and other areas of research, scholarship, and service.

Let us know your interest.
Complete the online Research Mentoring Interest e-form at buffalostate.wufoo.com/forms/research-mentoring-interest

Research Collaboration
Are you interested in collaborating with colleagues on research endeavors? A list of individuals looking for collaboration opportunities is being compiled.

Have you signed up yet?
To add your name to the list use the e-form at buffalostate.wufoo.com/forms/research-collaboration
(include your name, contact information, and suggested topics)

View the list at buffalostate.wufoo.com/reports/research-collaboration

Check the Fall Forum website library.buffalostate.edu/fallforum for more information.
# Poster Session
11:00 a.m. – 1:30 p.m.

## Welcome
12:30 p.m.

*Melanie L. Perreault, Provost*

*Katherine S. Conway-Turner, President*

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## Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome by Katherine S. Conway-Turner, President</td>
<td>2</td>
</tr>
<tr>
<td>Message from Melanie L. Perreault, Provost</td>
<td>3</td>
</tr>
<tr>
<td>Deans, Research &amp; Creativity Council, and Planning Committee</td>
<td>4</td>
</tr>
<tr>
<td>2018 Distinguished Awards</td>
<td>5</td>
</tr>
<tr>
<td>New Faculty 2017–2018</td>
<td>6</td>
</tr>
<tr>
<td>Summary of Sources of Funding</td>
<td>8</td>
</tr>
<tr>
<td>The Million Dollar Club</td>
<td>9</td>
</tr>
<tr>
<td>Presenter Abstracts</td>
<td>10</td>
</tr>
</tbody>
</table>
Welcome to Buffalo State College’s 2018 Faculty/Staff Research and Creativity Fall Forum. As SUNY’s urban engaged campus and an anchor institution within Buffalo, we are committed to exploring issues near and far from our location. We are dedicated to excellence, engagement, and social responsibility in all aspects of our work. The research foci and engagement within disciplinary studies takes many forms on our campus. We applaud basis and applied research as well as social action research and research that advances our teaching and our ways of knowing the world around us. Buffalo State faculty and staff are often at the center of critical exploration within their field and frequently their expert knowledge is tapped locally, regionally, nationally, and internationally.

I invite and encourage all members of our Buffalo State community to participate fully in our fall Faculty/Staff Research and Creativity forum. Here you will gain a glimpse into the many projects and scholarly efforts that are occurring here at Buffalo State. Highlighting faculty and staff scholarly and creative work is an important acknowledgement of the significant time, energy, and talent that has gone into the completion of these projects.

Oftentimes we are best acquainted with the scholarly work within our departments or those areas closest to our discipline. This forum will allow you to experience and appreciate the wide ranging research that occurs here at Buffalo State.

Please join me in celebrating and applauding the participants that contributed to the outstanding research and creative endeavors that will be shared today.

Sincerely,

Katherine Conway-Turner, Ph.D.
President
The Faculty/Staff Research and Creativity Fall Forum is a celebration of the vibrant intellectual environment at Buffalo State. Congratulations to all participants and thanks to the Research and Creativity Council, Research and Sponsored Programs for convening this event.

Colleagues sharing research and creative accomplishments remind everyone of the richness and diversity of our scholarly endeavors. Outcomes shared in the forum cover a wide spectrum of basic and applied research and show evidence of Buffalo State’s commitment to economic development and engagement with the community. I extend my appreciation and gratitude to all participants for their individual and collective commitment to intellectual discovery and for allowing the Buffalo State community to share in their accomplishments.

Sincerely,

Melanie L. Perreault, Ph.D.
Provost
19th Annual

Faculty/Staff
Research and Creativity Fall Forum

OCTOBER 25, 2018 • HOUSTON GYM • BUFFALO STATE

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James Mayrose, School of the Professions
Kevin J. Miller, Graduate School
Wendy A. Paterson, School of Education
Mark W. Severson, School of Natural and Social Sciences

Research and Creativity Council
Jessica Berg, Interim Director of Pre-Award and Contract Service, Sponsored Programs
Clairissa D. Breen, Assistant Professor, Criminal Justice
Jeff Chow, Assistant Professor, Business
Carol A. DeNysschen, Chair and Professor, Health, Nutrition, and Dietetics
John D. Draeger, Professor, Philosophy, and Director, Teaching and Learning Center
Gina Game, RCC Coordinator, Sponsored Programs
Carlos R. A. Jones, Associate Dean, School of Arts and Humanities
Kevin J. Miller, Dean, Graduate School
Karen O’Quin, Associate Dean, School of Natural and Social Sciences
Rebecca Ploeger, Assistant Professor, Art Conservation
Michelle Y. Rudnicki, Director, Corporate/Foundation Relations and Planned Giving
Raquel J. Schmidt, Chair and Associate Professor, Exceptional Education
Donna Scuto, Associate VP for Sponsored Programs
Mark W. Severson, Dean, School of Natural and Social Sciences; Special Adviser to the Provost for Academic Research Initiatives
Jill K. Singer, Professor, Earth Sciences and Science Education; Director, Undergraduate Research Office
Macy P. Todd, Assistant Professor, English
Robert J. Warren II, Associate Professor, Biology; RCC Chair
Kathy L. Wood, Associate Dean, School of Education
Hongliang (Jimmy) Xu, Professor, Mathematics; Coordinator, Pre-Award Outreach
Jing Zhang, Associate Professor, Elementary Education, Literacy, and Educational Leadership
Rita M. Zientek, Associate Dean, School of the Professions

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Kaylene Waite, Senior Graphic and Web Designer, Marketing and Communications Office
Robert J. Warren II, Associate Professor, Biology
Hongliang (Jimmy) Xu, Professor, Mathematics; Coordinator, Pre-Award Outreach

Special thanks to Carol DeNysschen and Mary Kren, past coordinators for the Research and Creativity Fall Forum
2018

Distinguished Awards

SUNY Distinguished Professor Ranks

SUNY Distinguished Service Professor
Drew J. Kahn, Distinguished Service Professor, Theater

SUNY Chancellor's Award

SUNY Chancellor's Award for Excellence in Classified Service
Tammy E. Anna, Secretary 1, Computer Information Systems

SUNY Chancellor's Award for Excellence in Adjunct Teaching
James R. Bensley, Lecturer, Geography and Planning

SUNY Chancellor's Award for Excellence in Faculty Service
Carol A. DeNysschen, Chair and Professor; Health, Nutrition, and Dietetics
M. Stephen Pendleton, Chair and Associate Professor, Political Science

SUNY Chancellor's Award for Excellence in Professional Service
Kathy L. Wood, Associate Dean, School of Education

SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities
Karen Sands-O'Connor, Professor, English

SUNY Chancellor's Award for Excellence in Teaching
Lynn M. Boorady, Professor, Fashion and Textile Technology

President's Award for Excellence

President's Award for Excellence in Academic Advisement
Neil P. O'Donnell, Senior EOP Counselor, Educational Opportunity Program

President's Award for Excellence in Career Achievement for Faculty
Howard M. Reid, Professor, Psychology

President's Award for Excellence as a Graduate Research Mentor
Jevon D. Hunter, Woods-Beals Endowed Chair for Urban Education; Associate Professor, School of Education
Jennifer D. Ryan-Bryant, Associate Professor, English

President's Award for Excellence in Librarianship
Amy D. Rockwell, Associate Librarian, E. H. Butler Library

President's Award for Excellence in Service to the College
Lisa Marie Anselmi, Chair and Associate Professor, Anthropology
Dianne S. McCarthy, Associate Professor, Elementary Education, Literacy, and Educational Leadership
Catherine M. McCoy, Office Assistant 2 (Keyboarding), Educational Opportunity Program

President's Award for Excellence in Teaching
Cynthia A. Burnett, Associate Professor, International Center for Studies in Creativity
Jason D. Grinnell, Chair and Associate Professor, Philosophy
Maria D. Pacheco, Associate Professor, Chemistry
**New Faculty and Librarians 2017–2018**

Saquib M. Ahmed, *Assistant Professor, Engineering Technology*

Christie L. Angrisano, *Lecturer, Elementary Education, Literacy, and Educational Leadership*

Gabriel J. Atchison, *Lecturer, School of Natural and Social Sciences*

Michelle R. Baird, *Lecturer, Earth Sciences and Science Education*

Fiona T. Beckett, *Assistant Professor, Garman Art Conservation*

Michael R. Bedford, *Lecturer, Health, Nutrition, and Dietetics*

Danielle Bouton-Wales, *Lecturer, Career and Technical Education*

David F. Braun, *Lecturer, Biology*

Dana M. Breidenstein, *Lecturer, Elementary Education, Literacy, and Educational Leadership*

David Brink-Roby, *Lecturer, Earth Sciences and Science Education*

MaryBeth Brumagin, *Lecturer, Elementary Education, Literacy, and Educational Leadership*

Shannon M. Burke, *Lecturer, English*

Garrett J. Busshart, *Lecturer, Writing Program*

Jason K. Bussman, *Lecturer, Writing Program*

Hannah Choi, *Lecturer, Elementary Education, Literacy, and Educational Leadership*

Charles Clark, *Lecturer, Business*

Lynne J. Cohen, *Lecturer, Elementary Education, Literacy, and Educational Leadership*

Robert J. Collignon, *Lecturer, Art and Design*

Phoebe B. Collins, *Lecturer, Writing Program*

Zachary M. Colson, *Lecturer, Chemistry*

Gregory C. Conley, *Lecturer, Writing Program*

Erica R. Cope, *Lecturer, Writing Program*

Mary T. Cornwell, *Lecturer, Communication*

Ariel L. Costanzo, *Lecturer, Social Work*

Joseph P. Crangle, *Lecturer, Criminal Justice*

Denea Czapla, *Lecturer, Mathematics*

Corey Damon, *Lecturer, Chemistry*

George L. Davis II, *Lecturer, Music*

Jennifer L. DellaPenta, *Lecturer, Speech-Language Pathology*

Kimberly E. K. DeMarco, *Assistant Professor, Psychology*

Julia B. Doyle, *Lecturer, History and Social Studies Education*

Tom A. Fuchs, *Lecturer, Speech-Language Pathology*

Lynette L. Gawron, *Lecturer, Art and Design*

Charles Gonzalez, *Lecturer, English*

Crystal A. Gonzalez, *Lecturer, Fashion and Textile Technology*

James G. Graczyk, *Lecturer, Health, Nutrition, and Dietetics*

Daniel Gwirtzman, *Lecturer, Theater*

Jiaxiu He, *Assistant Professor, Business*

Therese J. Hickok, *Lecturer, Communication*

Robert Hill, *Lecturer, Career and Technical Education*

Cristina Hiscock, *Lecturer, Modern and Classical Languages*

Adam D. Huck, *Lecturer, Elementary Education, Literacy, and Educational Leadership*

Cornelia Jacob, *Lecturer, Exceptional Education*

Gregory A. Johnson, *Lecturer, Exceptional Education*

Peter M. Johnson, *Lecturer, Theater*

Shannon T. Jonas, *Lecturer, Writing Program*

Jennifer L. Jones, *Lecturer, Exceptional Education*

James S. Kayorie, *Lecturer, Writing Program*

Hal P. Kingsley, *Lecturer, Business*

Alissa S. Kowalski, *Lecturer, Writing Program*

Lee M. Krol, *Lecturer, Biology*

Gavin M. Leighton, *Assistant Professor, Biology*

Thomas J. Lyons, *Lecturer, Elementary Education, Literacy, and Educational Leadership*

Aleksandra D. Malejs, *Lecturer, Theater*

Diana Maskell, *Lecturer, Elementary Education, Literacy, and Educational Leadership*

Jessica Mason, *Lecturer, Writing Program*

Justin J. Masucci, *Lecturer, History and Social Studies Education*

Jill McCormick, *Lecturer, Modern and Classical Languages*
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Kurt J. Minervino, Lecturer, Elementary Education, Literacy, and Educational Leadership
Kathryn R. Moore, Lecturer, Writing Program
Thomas Murphy, Lecturer, Elementary Education, Literacy, and Educational Leadership
Latrese N. Myers, Lecturer, Communication
Brighid C. Niccum, Lecturer, Mathematics
Paul W. Nippard, Lecturer, Computer Information Systems
Nyandusi A. Nyachae, Lecturer, Social and Psychological Foundations
David O’Bryan, Lecturer, Elementary Education, Literacy, and Educational Leadership
Amy E. O’Connor, Lecturer, Speech-Language Pathology
Melanie A. Olczak, Lecturer, Mathematics
Michael Pawlikowski, Lecturer, Mathematics
Teresa S. Peipins, Lecturer, Writing Program
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Paul I. Perlman, Lecturer, Economics and Finance
Ksenia Petlakh, Assistant Professor, Criminal Justice
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Kendra B. Preteroti, Lecturer, Art and Design
Chanel P. Prince, Lecturer, Sociology
Molly E. Ranahan, Lecturer, Political Science
Jose G. Rivera, Lecturer, Exceptional Education
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Matthew Westley, Lecturer, Physics
Ashlee M. Wilde, Lecturer, Political Science
Royce L. Woods, Lecturer, Business

*Initial hire September 1, 2017, through September 1, 2018
SUMMARY OF SOURCES OF FUNDING

Some projects participating in this year’s forum received funding from:

Buffalo City School District
Buffalo State Fostering Innovation in Teaching with Technology (FITT) Academy
Buffalo State FSA Founders Fund (Faculty-Student Association)
Buffalo State Provost Faculty Fellowship
Buffalo State Research Incentive Funds Program
Buffalo State Undergraduate Research Office
Cotton Incorporated
Electric Power Research Institute (EPRI)
Erie County Department of Environment and Planning
German Physical Society
Health Resources and Service Administration (HRSA)
Hudson River Foundation
Andrew W. Mellon Foundation
National Endowment for the Humanities (NEH)
National Institute of Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Drug Abuse (NIDA)
National Institutes of Health (NIH)
National Natural Science Foundation of China
National Science Foundation
New York State Education Department
New York State Office of Alcohol and Substance Abuse Services (OASAS)
Niagara Greenway Ecological Standing Committee
Office of Children and Family Services
Office of Temporary and Disability Assistance
P2 Collaborative of Western New York
Paleo Cultural Research Group
Preventionfocus, Inc
Shandong Provincial Government (China)
Shandong Provincial Association of Social Science (China)
E. O. Smith Arts and Humanities Faculty Development Fund
Substance Abuse and Mental Health Administration
SUNY Innovative Instruction Technology Grants (IITG)
Texas Parks and Wildlife Department
U.S. Fish and Wildlife Service
U.S. Department of Agriculture
U.S. Department of Education
U.S. Environmental Protection Agency (EPA)
University of Rochester
United University Professions (UUP) Individual Development Awards Program
WNY United Against Drug & Alcohol Abuse, Inc.
WNY Women’s Foundation
Recognizing the Members of the Million Dollar Club

The Million Dollar Club was established in 2006 to recognize individuals and projects that reached or exceeded $1 million in sponsored program funding since the year 2000. Each year individuals or projects that exceed the million dollar mark are added to the Million Dollar Club. Listed below are current Buffalo State employees and programs that are members of the Million Dollar Club.

The Galaxy Club distinguishes those that exceed $500 million in sponsored program funding.

The Million Dollar Club

Lyubov E. Burlakova, Senior Research Scientist, Great Lakes Center
Darryl C. Carter, Director, Step Program/Precollegiate Academic Success Center
Patrice A. Cathey, Director, Liberty Partnerships/Precollegiate Academic Success Center
Center for Excellence in Urban and Rural Education
Michael J. DeMarco, Professor, Physics
Tom M. Giambrone, Professor, Mathematics
Theresa M. Janczak, Associate Professor, Exceptional Education
Alexander Y. Karatayev, Director, Great Lakes Center
Steve M. Macho, Associate Professor, Career and Technical Education
Dan L. MacIsaac, Chair and Associate Professor, Physics
Susan A. McCartney, Director, Small Business Development Center
Susan E. McMillen, Professor, Mathematics
Donald A. Patterson, Director, Upward Bound/Precollegiate Academic Success Center
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N. John Popovich, Chair and Associate Professor, Career and Technical Education
Margaret A. Shaw-Burnett, Associate Vice President, Continuing Professional Studies
Jill K. Singer, Professor, Earth Sciences and Science Education; Director, Undergraduate Research Office
William F. Wieczorek, Director Emeritus, Institute for Community Health Promotion
Zhang Jie, Professor, Sociology; Director, Center for China Studies

The Galaxy Club

Institute for Community Health Promotion/Center for Development of Human Services
Patricia H. and Richard E. Garman Art Conservation
Increasing Engagement and Retention by Adding Gamification to an Online Graduate Course  
*Presenter: Andrea Nikischer*  
*Funding Source: Fostering Innovation in Teaching with Technology (FITT) Academy*

This presentation will provide detailed information about a Fostering Innovation in Teaching with Technology (FITT) Academy Project that transformed the course ADE 500: Introduction to Adult Education by adding gamification. All students in the Adult Education Graduate Certificate Program and the Adult Education M.S. program must complete ADE 500 in their first semester of study. The course provides a foundation of knowledge and competencies that are required for success in the adult education graduate program and the adult education field. The addition of gamification to ADE 500 enhanced the educational experience for first semester graduate students with the goal of increased retention and improved performance in ADE 500 and beyond. Many graduate students, particularly first generation graduate students, are intimidated as they begin their graduate studies. Adding badges helps to reassure and motivate students by allowing them to see concrete evidence of their successes early and often. It also provides a mechanism to ensure students are mastering each of the specific content and skill areas required for success in their graduate degree program.

Archaeology and the Community: The Buffum Street Site  
*Presenter: Susan Maguire*

The Buffum Street Site is one of the preeminent archaeological and historical resources in the City of Buffalo. This locality is known to encompass three significant Indigenous occupations ranging in date from AD 1000 to approximately 1844. Additionally, a Seneca school, one of the first permanent schools in the City of Buffalo, was established on this site in 1800. Recent development in the area threatened to impact these important resources without an archaeological assessment. Community involvement and education on the value of heritage resources is crucial to protect and preserve these important community assets.

Entangled: Recent Paintings by Artist Candace Masters  
*Presenter: Candace Masters*  
*Funding Source: E.O. Smith Arts and Humanities Faculty Development Fund*

Entangled: Recent Paintings by Candace Masters This series of paintings by Candace Masters, associate professor of art and design (Art Education Program), uses the pliant and intentionally ambiguous theme, “entangled”, as a metaphor to explore visually the complex web of issues facing women in American society and culture today. Using a combination of materials and processes, including traditional underpainting; layers of semi-translucent oil paint; and impasto impregnated with crushed basalt, sand, and glass beads, her work combines centuries-old western figure painting
techniques and contemporary practices. With these, Masters recasts the familiar subject of the female figure as a modern woman, drawn in many directions and bound by conflicting obligations and expectations. The work is currently on view in a solo exhibition at Salve Regina Gallery in Washington, D.C.

Interconnect: A Double Collaboration

**Presenters:** Carol Townsend, Art and Design; James Battaglia, Biology; Lynn Boorady, Fashion and Textile Technology

**Funding Source:** FSA Founder’s Fund Grant

Between Carol Townsend, associate professor of art and design, and Jim Battaglia, research associate at the Eckert Herbarium, specimens from the Herbarium became inspiration for DES 101 student projects. Drawings were turned into distinctive design motifs with each student creating a portfolio based upon symmetrical and asymmetrical patterns. Townsend then contacted Lynn Boorady, chair of the Fashion and Textile Technology Department, to discuss a further collaboration. Together, a FSA Founder’s Fund grant proposal was written. Upon acceptance, FTT 304 students under the direction of Assistant Professor Brianna Plummer, developed a print appropriate for a garment based upon the scanned image from thirteen selected Design 101 patterns. The fashion and textile technology faculty contracted to print yardage of the completed surface design patterns. Students in the construction courses were given a portion of the resulting custom printed fabric to create the final garment design. These fashions were highlighted during Runway 11. At the end of the semester, students of both departments came together to share their creative thoughts and ideas with each other and discuss the final outcomes. Their garments were put on display in Fashion Technology cases.

Subsequently, “Interconnect” has been accepted for inclusion in the 2018 International Textile and Apparel Association Conference to be held in Cleveland, Ohio from November 6–9. We feel that this double collaboration was unique and extremely valuable to student learning. Students have experienced new avenues of inspiration, developed collaborative relationships with students from varying fields of study, and were able to visualize their designs in new and exciting ways! Thank you to Jim Battaglia, Lynn Boorady, Brianna Plummer, Instructor Erin Habes (FTT 452) who obtained models and a stylist to showcase these garments in Runway, and Instructor Kym Mathias (FTT359) who created the showcase display on the third floor of the Technology building, and especially to talented students from our two departments without whom this double collaboration would not have been possible!

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**Art Conservation**

Discovering the origin of Indian yellow pigment

**Presenters:** Rebecca Ploeger and Aaron Shugar

“I myself saw mango leaves lying before the cows, the collection of the urine, and the manufacture of the Piuri [Indian yellow]. So the real source of this kind of Piuri is now beyond any doubt whatever” – these are T.N. Mukharji’s concluding words to his 1883 report in The Journal of the Society of the Arts [1] in response to a request from Sir Joseph Hooker of the Royal Botanic Gardens, Kew (England) to investigate the origins of the source of the enigmatic pigment. The source of Indian yellow has been debated since it arrived on the European artists’ palette in the late 18th century – was it plant based, animal based, or mineral based? Scattered throughout the 19th century literature are descriptions of the production and composition of the pigment, including several studies by chemists/biochemists who were fascinated by its potential metabolic animal origin. These initial studies on Indian yellow (specifically euxanthic acid, the molecule that gives the yellow colour) are sometimes cited as a starting point for understanding glucuronidation, now recognized as an important metabolic pathway. Sir Joseph Hooker was aware of these studies and the reports of Indian yellow being a urinary sediment, and it was a request in early 1883 from Professor Graebe (at
that time in Geneva, Switzerland) for a sample of Indian yellow for chemical examination and study that prompted Mr. Mukharji's investigations in Monghyr, India. In the early 20th century, the production of Indian yellow ceased, and consequently it was phased out of artists' paints [2]. In the art world, the understanding of Indian yellow ended at this time as well; there was evidence that it was potentially an animal metabolite, but the process of glucuronidation was not proven until the 1950s. With the interdisciplinary research and interest in the pigment lost, in an art historical context, work on understanding the pigment stagnated; while, from a biomedical perspective, research continued and major breakthroughs in understanding drug metabolism were accomplished. This current work attempts to clarify the origin of Indian yellow and features results relevant to the animal origin of the pigment. The samples sent by Mukharji to Kew in 1883 still exist in the Economic Botany Collection. Samples of Piuri from Kew, and other known historic collections were obtained for full chemical characterization to better understand their composition, structure, and origin. Recent analyses have identified hippuric acid in some historic samples [3]. Aside from euxanthic acid, a glucuronide, hippuric acid is another urinary byproduct. This new evidence further supports the story that Indian yellow is made from urine, or at the very least, urine is part of the manufacturing process. References [1] Mukharji TN. Piuri or “Indian Yellow”. J Soc Arts. 1883;32: 16-17. [2] Ploeger R., Shugar A. The story of Indian yellow – excreting a solution, J Cult Herit. 2017;97: 2136-2142. [3] Ploeger R., Shugar A., Smith GD., Chen VJ. Late 19th century accounts of Indian yellow: The analysis of samples from the Royal Botanic Gardens, Kew, Dyes Pigm. 2019;160: 418-431.

Recreating a defunct pigment: Zinc orange

Presenters: Aaron Shugar and Rebecca Ploeger

This study was inspired by two tubes of Orangé de zinc (zinc orange) from the Parisian colour merchant, Dubus (1877–1897) discovered in a paint box addressed to Henri de Toulouse-Lautrec (located in his family home near Toulouse, France). Zinc orange is a rare and relatively undocumented pigment, with only one sentence devoted to it in George Field's 1869 Chromatography, which states “... when hydrochloric acid and zinc are made to act on nitro-prusside of sodium, a corresponding zinc compound is formed of a deep orange colour, slightly soluble in water, and not permanent.” [1] This is the only information on the pigment, and this sentence has been echoed over time in the literature. This pigment was available to artists in a brief window toward the end of the 19th century; its short stint on the artists’ palette was due to its instability, and rapid change in colour from an orange to a blue/brown. The two Toulouse-Lautrec paint samples of zinc orange were characterized. Initial x-ray fluorescent (XRF) studies showed promise in confirming the presence of the pigment, as high levels of zinc were identified; however, pyrolysis gas chromatography – mass spectrometry (Py-GC-MS) detected a triphenylmethane-based organic dye. This dye had a similar colour, but was also very light fugitive and had a short period of use around the same time. It is unknown why the paint tubes were labeled as zinc orange, though it can be suspected that is was because of the known fugitive nature of the pigment, and it was an attempt to produce the rich orange colour with another colorant. Regardless, it was decided to try to recreate the original zinc orange pigment from the brief description in Field's Chromatography. As there was no indication of the ratio of the components, four ratios were chosen (zinc to sodium-nitroprusside) to attempt to synthesize the pigment. As well, different processing methods were tested, including heating, grinding, and washing [2]. The pigment was also light aged to investigate the degradation mechanism and rate of colour change. This current work discusses aspects of synthesis, characterization, and aging. References [1] Field G., Salter, TW. Chromatography. (Windsor and Newton, London, 1869) p. 261. [2] Harada, K., Shugar, A., Ploeger, R. Experimentation in manufacturing zinc orange pigment, MRS Advances. 2018;2(39-40): 2135-2143.
Metabolic flashiness describes the sensitivity of semi-arid ecosystems to rainfall

*Presenter: Daniel L. Potts*

Water limitation controls the pace of above- and belowground biological activity in drylands and is a defining characteristic of these ecosystems. Net ecosystem CO2 exchange (NEE) is affected by above- and belowground biophysical processes and is mediated by the balance between ecosystem CO2 uptake by photosynthesis (gross ecosystem productivity; GEP) and the efflux of CO2 by the respiration of plants and soil microbes (ecosystem respiration; Re). Understanding the carbon cycling consequences of precipitation variability in dryland ecosystems requires improved appreciation and accounting of how plant-mediated GEP and plant- and soil microbial respiration differ in their response to rainfall. Our objective was to contrast the sensitivity of dryland ecosystem GEP and Re in response to inter- and intra-annual precipitation variability in a nearby grassland, savanna, and shrubland ecosystems in southeastern Arizona. To do this, we modified the Richards-Baker Index, which quantifies the flashiness of a stream’s hydrograph, to calculate analogous indices of ecosystem metabolic flashiness. In this way, ecosystem metabolic flashiness describes the frequency and rapidity of short term fluctuations in CO2 exchange in response to precipitation using tower-based time-series of daily averaged GEP and Re. We calculated annual GEP and Re flashiness (GEPf and Ref respectively) using six years of daily-averaged GEP and Re estimated from eddy covariance. In contrast to our prediction, annual GEPf was consistently greater than annual Ref. Furthermore, we predicted that increasing rooting depth would correlate with a decline in annual GEPf. In fact, annual GEPf was similar among the grassland, savanna, and shrubland. Whereas the response of annual GEPf to annual precipitation was plant community dependent and generally declined with increasing rainfall, annual Ref did not vary in response to precipitation. A decline in GEPf in response to increasing rainfall may be attributed to the saturating effect of additional rainfall on ecosystem photosynthesis. To better understand the influence of late summer monsoonal precipitation on ecosystem metabolic flashiness, we compared seasonal variation in GEPf and Ref. The effect of monsoonal storms on GEPf was plant community dependent such that shrubland GEPf strongly declined in response to rainfall whereas grassland and savanna GEPf was relatively unresponsive. We observed a similar pattern of plant community specific declines in Ref in response monsoonal precipitation. Conceptually similar to hydrologic flashiness, ecosystem metabolic flashiness may provide an additional lens through which to observe the influence of resource availability, shifts in community composition, and disturbance on ecosystem carbon cycling.

Release from intraspecific competition promotes dominance of a non-native invader

*Presenter: Robert Warren*

*Funding Source: Undergraduate Research Office, Buffalo State*

Species can coexist through equalizing (similar fitness abilities) and stabilizing (unique niche requirements) mechanisms. These forces maintain coexistence if intraspecific competition imposes more limitation than interspecific competition. Non-native species often de-stabilize coexistence, suggesting that they bring either a fitness advantage or a distinct niche requirement. We tested whether greater fitness or unique niche requirements best explained a successful North American invasion by the European Myrmica rubra ant. North American invaded-range M. rubra aggressively sting and occur in enormous numbers (fitness advantage), yet our study site has a history of anthropogenic disturbance that might favor M. rubra (unique niche). We compared M. rubra to native ants, principally the dominant North American woodland ant Aphaenogaster picea, using nest surveys and isotope analysis to assess niche characteristics, and we used physiological health (lipids and size), monthly bait station surveys and aggression assays to assess fitness characteristics. Given that observed population abundances may indicate competitive exclusion or niche differentiation
(e.g., non-natives often thrive in disturbed habitat), we confirmed the field observations with laboratory experiments that tested colony aggression (direct competition) and food retrieval (indirect competition). We found little evidence of M. rubra interspecific competitive advantage (aggression or food retrieval) or niche differentiation. Instead, M. rubra violated the basic assumption of coexistence theory: intraspecific competition < interspecific competition. Freed up from the costs and limitations of territorial competition, some non-native species may outcompete native species by not competing with themselves. This 'friendly release' from intraspecific competition may provide a mechanism for successful invasion.

Polymeric SUMO-2/3 chain modification of PML regulates the size, number, and stability of PML nuclear bodies

*Presenters: Xiang-Dong “David” Zhang and Robert White*

The posttranslational modification of promyelocytic leukemia protein (PML) by small ubiquitin-related modifier proteins (SUMOs) mediates the assembly of PML nuclear bodies (PML-NBs) that contain numerous different proteins. Acute promyelocytic leukemia (APL) is caused by a chromosomal translocation, t(15;17), resulting in the fusion protein between PML and retinoic acid receptor alpha (RARα). APL can be effectively treated by arsenic trioxide. Previous studies have supported a model that arsenic trioxide triggers polymeric SUMO-2/3 chain modification on the PML fragment of the PML-RARα fusion protein followed by RNF4-mediated ubiquitination and degradation of the fusion protein. The SUMO-targeted E3 ligase RNF4 contains four SUMO-interacting motifs (SIMs) for binding to polySUMO chain signals on target proteins, such as PML and PML-RARα. To elucidate the exact roles of polySUMO-2/3 chain modification in affecting the size, number, and stability of PML nuclear bodies, especially under the arsenic trioxide treatment, we transfected HeLa cells with a construct encoding GFP-tagged SIMs, followed by immunofluorescence microscopy. We found that compared to untransfected control cells, overexpression of GFP-SIMs reduces the number of PML-NBs, but simultaneously increases the size of PML-NBs. These results suggested that the interaction between GFP-SIMs and polySUMO-2/3 chains may prevent RNF4-mediated ubiquitination and subsequent proteasome-mediated degradation of PML. Our studies may provide insights into the mechanism by which polySUMO-2/3 chain modification mediates the ubiquitination and degradation of PML-RARα, and may lead to a better therapeutic treatment of APL using arsenic trioxide.

Identification and Characterization of Polymeric SUMO-2/3 Chain Modification at the Spindle Midbody during Cytokinesis

*Presenters: Xiang-Dong “David” Zhang and Te-An Chen*

SUMOylation is an essential post-translational modification that regulates a variety of important cellular processes through covalently conjugating small ubiquitin-related modifier proteins (SUMOs) to hundreds of different protein targets and subsequently affecting their activity, interaction, and stability. There are three main SUMO homologs expressed in mammals: SUMO-1, SUMO-2 and SUMO-3. SUMO-2 and SUMO-3 are 96% identical (referred collectively as SUMO-2/3), while SUMO-1 shares only 45% identity to SUMO-2/3. In contrast to SUMO-1 that is often attached to the lysine residues of target proteins as monomers, SUMO-2/3 are conjugated to target proteins in the forms of both monomers and polymeric SUMO-2/3 chains. To monitor the presence of polymeric SUMO-2/3 chain modification in vivo, we transfected human HeLa cells with a plasmid that encodes a green fluorescent protein (GFP) tagged fusion protein containing four tandem repeats of SUMO-interacting motifs, which exhibit a high binding affinity to SUMO-2/3 chains, followed by immunofluorescence microscopy. We found that GFP-SIMs fusion proteins are co-localized with the spindle midbody protein markers, including Aurora B, CENP-E and Tubulin, during cytokinesis. Furthermore, overexpression of GFP-SIMs fusion proteins causes an accumulation of SUMO-1,
SUMO-2/3, the SUMO-conjugating E2 enzyme Ubc9, the SUMO E3 ligase PIASy, and the SUMO E3 ligase RanBP2 at the spindle midbody. Lastly, GFP-SIMs transfected cells at the stage of cytokinesis frequently contain chromatin bridge within the cleavage furrow, suggesting that a defect in resolving DNA catenation may block the completion of cytokinesis in these transfected cells compared to untransfected cells. Our studies suggested that polymeric SUMO-2/3 chain modification may play a critical role in regulating the progression of cytokinesis in mammalian cells.

Business

Plugging the Malaysian ‘Great Brain Drain’: Recognition of Dual Citizenship
Presenter: Jeffrey Chow

Contemporary international migrations are changing the global labor landscape. However, not all labor migration results are beneficial. Some home countries lose a great amount of home-educated labor to host countries that offer better working and living conditions, consequently lowering the available amount of critically-needed intellectual capital for national utility. Ideally, host countries seeking workers should strive to develop a national policy that maximize ‘brain gain’ by attracting workers with complementary skills and knowledge to fill local employment gaps. Conversely, donor countries that send workers abroad should develop policies that minimize its brain drain by encouraging their skilled citizens to return home after acquiring enhanced skills and knowledge, thus taking advantage of ‘brain circulation’ effects. Therefore, a nation’s best interest, either a host or donor country, may be best served through the development of protocols that minimize friction during the migration process for preferred migrants. Using Malaysia, as an example, we argue that the recognition of dual citizenship would be the appropriate prescription in reducing the “Great Brain Drain” problem afflicting the local labor market. This recognition serves several purposes: 1) provide labor with economic opportunities while retaining their ability to adjust to political climate by taking advantage of the global mobility of talent with favorable immigration policies; 2) increase Malaysia’s financial and human capital stock by leveraging its diasporas; and 3) alleviate friction in the migration process between Malaysia and host countries that will smooth travel between countries and increase economic transactions back to the country in the form of social and economic remittances. This paper examines this allowance and discusses the implications of a potential Malaysian dual-citizenship policy.

The Impact of Photos in the Sharing Economy: An Empirical Analysis of Airbnb
Presenter: Jiaxiu He

Photos play a central role in online peer-to-peer marketplaces. This paper studies the well-known accommodation booking site Airbnb, Inc., analyzing the effects of photos on a listing’s booking popularity. Using a large dataset of more than 20,000 property listings in New York City, the authors find that photos matter significantly on Airbnb, and that different photos matter differently. Using a computational aesthetics approach, information about these photos is extracted to generate more specific insights on the characteristics of photos that drive greater demand. It is observed that listings with more photos and background photo containing essential features (e.g., a bed, sofa, etc.) enjoy higher booking rates. The effect sizes of the booking price and the number of photos increase after accounting for endogeneity using instrumental variables constructed from data drawn from Airbnb listings in San Francisco. These findings have direct and practical implications for Airbnb hosts’ operations.
The Influence of Sino-U.S. Trade war on Employment of China

*Presenter: Changan Li*

Under the thought of "American priority," President Donald Trump has intent to start the trade war with China, thereby revitalizing American manufacturing industry and creating more jobs for the American. Behind the trade war is the employment war. For China, due to the greater dependence on U.S. trade, it is possible to have a more significant impact on domestic employment. In extreme cases, there will be 2.9 to 5.8 million job reductions in China. Thus, negotiation is the best strategy to resolve this trade dispute. The further expansion of "The Belt and Road" strategy, the reduction of trade dependence on a few countries, and the acceleration of innovation-driven strategies will contribute to mitigating the impact of trade wars on employment in China.

Study on Chinese Medical Students’ Perception of Physician-Patient Relationship and Influence-factors

*Presenter: Wei Wang*

*Funding Source: Government of Shandong Province, China*

Introduction Physician-patient relationship is one of the most important human relations during medical practices. What a Physician's work attitudes and behavior is like largely depends on their understanding of the nature of this relation. As future physicians, medical students’ perception of the essence of physician-patient relationship matters a lot to medical education. This study aims were (1) to investigate the medical students’ conception of the relationship between physicians and patients in China; (2) to test the factors influencing students’ conception. Methods This research employed a questionnaire survey and deep interview. We made the questionnaires including a Likert scale in which the score ranged from 1-5. Descriptive analysis and logistic regression are adopted. Sampling and participants Medical students (n=1600) in Shandong province China from freshman to senior were randomized into this investigation among which we got 1389 valid questionnaires. Male participants account for 37.8%, female participants account for 62.2%. Results More than half medical students (54.4%) considered relationship between physicians and patients were currently bad in China. They rated the physician-patient harmony degree as 2.43 which is medium. When asked “who do you think plays a key role in creating a good physician-patient relationship”, about 36.86% of the participants chose the answer “the physician”, the second most choice (20.09%) was “the government”, the third most choice (18.14%) was “mass media”, about 16.27% of the participants thought patients played a key role. Answers to the question “the nature of physician-patient relationship” are as follows: more than half of the samples (51.8%) chose the answer “human relation”, those who thought it was “cooperation relationship” accounted for 35.10%, the percentage of the answer “friends” was 11.30%, only 1.90% of the participants chose the answer “trading relationship”. As far as the question “what attitudes do you think physicians should have towards patients” was concerned, 67.31% of the students thought it should be “respectful and taking good care of the patients”, 30.17% of the samples chose the answer “equal to the patient”. Logistic Regression demonstrated that school, grade, one-child or not, gender and origin are the influence factors. Conclusions Harmony degree of physician-patient relationship was rated low by medical students in China. School A and school B, male students, senior students, only-child students gave a higher score than their counterparts. Medical students hadn’t developed explicit opinion about who was the main role in creating a good physician-patient relationship. Most students thought relationship between physician and patient should be human relation which they believed physician should center on patient’s interests and treat them with love. Male students preferred the left relationship than human relation.
The Types and Systematic Management Strategies of the Preschool Educational Institutions for Immigrant Children (PEIICs) in HAIDIAN District of Beijing

*Presenter: Liqun Liu*

Nowadays, there are lots of low charges PEIICs in Beijing, which are currently illegal since they can’t meet the uniform eligibility criteria set up by the Chinese government. The PEIICs can be classified into five types: Kindergartens which can provide basic educational resources; Kindergartens that could not provide basic educational resources; Preschool Classes inside the public-funded primary school; Preschool Classes inside the private-funded primary school; Informal preschool educational institutions. It is the precondition for the government to identify the legal status of PEIICs, which means transferring the current uniform eligibility criteria into multiple eligibility criteria. The government should make different management strategies for different types of PEIICs and to establish a multiple system of set-up criteria. Firstly, the government should help the Small-scale and Simply-equipped Kindergarten (SSK), which offers basic kindergarten educational resources at a relatively low investment to become the leading institutions among the PEIICs. Secondly, it should encourage the establishment of more informal preschool educational institutions. Thirdly, strict supervision should be put on the private schools’ preschool classes, and encourage the public schools’ preschool classes to recruit more immigrant children. Fourthly, if the kindergartens that have already registered as normal kindergartens couldn’t really meet the eligibility criteria, they have to re-register as SSK. Finally, it should establish an evaluation system based on classification and an institution of lowering the scale of those PEIICs that can’t meet the set-up criteria.

Four Approaches to a Problem about Double-integral

*Presenter: Hongxia Yan*

By exchanging the order of integration, integration by parts, Green formula and Power series expansion method, this paper provides four ways for solving a kind of Double-integral.

Designing reading comprehension questions to cultivate CT in CER under Chinese Context

*Presenter: Yingjie Li*

This paper looks at problems in designing open-end questions for critical thinking (CT) assessment. Open-end questions are from the textbooks of college English reading (CER) in China. Statistics are presented on Bloom’s taxonomy. Problems are found and solutions are suggested.

Monologue and dialogue: A comparative Study of China and American dialogic teaching

*Presenter: Jingya Xiao*

Dialogic teaching harnesses the power of talk to stimulate and extend pupils’ thinking and advance their learning and understanding. It is an approach and a professional outlook rather than a specific method. It requires us to rethink not just the techniques we use but also the classroom relationships we foster, the balance between teacher and teaching, teacher and students, as well as the way how we conceive of knowledge. Due to the differences in social background, historical background and education policy between China and the United States, the actual development status of dialogue teaching in Chinese and American classrooms is also different. By analyzing the differences between Chinese and American dialogue classrooms, it is concluded that traditional single teaching still takes up a large proportion in Chinese and American classrooms, and it takes up a larger proportion in China than in American classrooms. As a result of teaching objectives, teacher level, teaching tasks and other reasons, dialogical teaching effect is also different. The effect of conversational teaching in American classroom is more remarkable, while that in China is limited.
The differences between Chinese and American dialogues are mainly reflected in the following aspects: teachers’ understanding of dialogues; Students’ level of critical thinking; Teaching evaluation system; Classroom teacher-student relations.

Research on Cooperation between Hotel and Online Self-service Travel Business
*Presenter: Yukun You*
*Funding Source: Shandong Provincial Association of Social Science (China)*

With the constant development of economy, people’s material living standards are increasing day by day. The pursuit of spiritual enjoyment in people's lives is more and more important. As an effective way to satisfy the tourists’ spirit and relieve the tourists’ work pressure and competitive pressure, online travel has become an indispensable part of people's lives. The continuous development of online travel market is the product from the increasing of the Internet technology and consumer demand, the rapid development of tourism has driven the economy and infused other ancillary industries. The hotel industry has always occupied a significant position in the tourism-related industries; the hotel that provides tourists with accommodation facilities and catering services is not only an important material basis for the development of tourism but an important support for tourists in completing their tourism activities. Therefore, to promote the coordinated development of the two is of great significance.

Measurement and Reflection on the Non-Governmental Organizations Social Capital in AIDS Prevention and Control
*Presenter: Jinyan Xu*
*Funding Source: National Natural Science Foundation of China*

Social capital is a very concerned issue in the research of organization development, and it is a new way to explore the sustainable development of non-governmental organizations(NGOs) in the field of AIDS prevention and control. Organizations are made up of individuals, so organizational social capital is the social network in a closely related small group that is owned by individuals but limited to bring benefits to the organization. From the perspective of social network analysis, this paper defines the three-dimensional concept of NGO social capital including structure, relationship and cognition and its constituent elements, and first uses the method of literature research, expert consultation, questionnaire survey to construct a set of social capital measurement tool for the AIDS-related NGOs. An empirical study was conducted on the social capital of 117 AIDS-related NGOs in China. The results of the study are as follows: (1) The social capital evaluation tool has good reliability and validity, and meets the basic requirements of surveying. (2) The total amount of social capital of AIDS-related NGOs is at a medium level. (3) The level of NGOs’ social capital in different regions and different types are different. (4) Most of anti-AIDS NGOs began to attach importance to and cultivate their own social capital in order to obtain sustainable resources and development opportunities. Some suggestions on developing and utilizing social capital to promote NGOs to participate in AIDS prevention and control activities are also proposed. For example, construct platform among organizations for information communication. Expand the organizations overall network scale and promote members interaction to increase the chances of contact with external resources and information. Strengthen the innovation of government management system and reduce the restrictions on NGOs. Promote the formation of civil society to enhance the people understanding and approve of NGOs that carry out AIDS prevention activities.
Chinese higher vocational education internationalization under the background of “the Belt and Road” initiative

Presenter: Zhen Huang

"The Belt and Road" initiative is the inevitable outcome of economic globalization and regional economic integration. "The Belt and Road" initiative brings new development opportunities to the international development of Chinese higher vocational education. A new concept consistent with “The Belt and Road” should be established for Chinese vocational education internationalization. Higher vocational colleges should adjust their running ideas, update their education concepts, take actions to adapt to the "going out" strategy of Chinese enterprises, and provide intellectual support and talent guarantee for internationalization. Internationalization of education includes "input" and "output." The main contents of input are advanced resources in developed countries, vocational education concepts and ideas, vocational education professional standards, vocational education teaching materials, excellent national teachers, etc. The main way to output is to send teachers to foreign country and recruit foreign students, introduce the concept and model of vocational education and career standard developed rapidly in China in recent years to other countries. The level of Chinese vocational education international exchanges and cooperation is not high. Vocational college teachers do not have a smooth external liaison information channel. Their English communication and bilingual teaching ability is limited. They face the shortage of international exchange and cooperation funds and resources. The realistic difficulties restrict the progress of internationalization of vocational education. Chinese vocational education must participate in the international cooperation deeply. We should promote the internationalization of Chinese vocational education through the construction of “The Belt and Road” initiative. We should train high-quality technical talents with international vision and realize the sustainable development of vocational education. There are some measures to achieve these goals. First, we can strengthen the overall design and planning, create a more open external atmosphere and gradually establish a series of policy to adapt to the internationalization of education. Second, we can intensify the basic and connotation construction efforts of vocational education, optimize the internal management and upgrade the hardware facilities of college. Third, we can broaden the international channels for teachers’ development, rely on various kinds of overseas study programs at all levels, improve the language and teaching ability of bilingual teaching and carried out diversified international exchanges and cooperation beyond the limitations of time and space. The internationalization of higher vocational education should gradually change from “input” to "output". Under the government's policy support, we should further explore the exchanges and cooperation mechanism between China and foreign countries, innovate the mode of international exchanges and cooperation, introduce foreign high-quality education resources effectively, and intensify the output of vocational education. We can improve internationalization level of Chinese higher vocational education in all aspects while cultivating skilled talents with international vision, understanding of international rules and international competitiveness.
leadership of Dr. Muriel Howard, CEURE has been responsible for 45 initiatives and partnered with over 200 public, private and charter schools. PIO encompasses five divisions which include: 1. CEURE-Center for Excellence in Urban and Rural Education 2. CAC-Community Academic Center 3. MECHS-Middle Early College High School Program 4. PASC – Pre-Collegiate Academic Success Center 5. WSPN – West Side Promise Neighborhood Project In this presentation, each of the directors will introduce and discuss their current initiatives, expanding on ways that Buffalo State College actively engages in responsible stewardship of our human and financial resources as SUNY’s only dynamic urban engaged campus.

Center for Health and Social Research

Survey of college student substance abuse problems: Role of access and norms
Presenters: Jonathan Lindner and Karl Wende
Funding Source: New York State Office of Alchol and Substance Abuse Services

Attending college offers an environment conducive to new experiences and opportunities, personal development and expression, and the formation of lifelong relationships. Nevertheless, many undergraduate students participate in potentially unsafe and risky health practices, leaving them at an increased risk for hypokinetic diseases, alcohol and substance use, mental health problems, and academic struggles. Recent studies indicate that approximately 40 percent of college students consume hazardous amounts of alcohol (five or more drinks for men, four or more for women) at least once every two weeks. Additionally, almost one third of college students reported marijuana use, while nearly twenty percent reported the use of other illegal substances during the past year. These key factors in college student use and associated problems often center on social access to alcohol and drugs and perceived norms. Collectively, these factors warrant the development and implementation of effective prevention and health promotion within our colleges. During the Fall 2017 semester, a college student health survey was administered to SUNY Buffalo State undergraduate students. The survey measured college students’ participation in risky health behaviors and their associated risks with using alcohol and other drugs. This presentation describes initial findings concerning the role of access and normative beliefs on substance use patterns among students. More specifically, this analysis of key social access and norms will offer further direction and insight into designing future prevention efforts.

Conceptualization Issues in Analyzing and Communicating Collective Impact Data
Presenters: Karl Wende and Jonathan Lindner

The concept of collective impact relies on aligning systems and organizations within a community toward a common population goal, usually a broadly defined and easy to understand population ideal like “Good health for everyone.” This approach leads many different entities and systems to change their activities in order to solve a complex set of problems. From an analytics viewpoint, each individual problem can be relatively easy to show progress against. For example, increasing the number of miles of bike trails in a community can contribute to better health for those that use them. But, the contribution these trails may have is variable with regard to intensity and time committed for individuals and only a small proportion of the community is likely to use the trails. Because of the limited impact across the population and the long time horizon for results to be realized, critics often cite low return on investment for projects like bike trails. Therefore, an easy to quantify process measure like miles of bike trails can devolve into an expensive quest for individual level data that confirms progress toward better health for those using trails. The collective impact approach attempts to enlist organizations that can contribute to the common goal, designed to reach a critical mass of the population to achieve and sustain change over time. Part of the collective impact strategy is to establish shared measurement of processes that can begin to illustrate the benefit of mutually reinforcing activities. When these benefits
begin to be realized, behavior in the entities, and a growing number of their partners, begins to change in a way that supports their common goal. Analytically connecting complex and disparate process measures to mutually agreed upon outcomes can be a challenge, especially over the relatively long time frames necessary to impact health outcomes. Visual and statistical indicators of collective impact progress will be presented.

International Center for Studies in Creativity

A Hard Look at Human Trafficking
Presenter: Dr. Jo A. Yudess

As faculty adviser for a group of students in an Alternative Break in Baltimore in May, I became involved in their passionate responses to the issues. Several expressed interest in doing research on the topic, so working with them, I began to research it as well, and was stunned at the massive amount of information on the topic and the general public's lack of knowledge and mine. In early October, some of the students, including a 2018 graduate, presented at the Anne Frank Project with me. Some of the students will also join me to answer questions at this Fall Forum. This is not about people brought in from other countries, it is about U.S. citizens, including children as young as five-years-old and as old as 80. All 50 of the United States and all territories have human trafficking problems. The research examines the causes, some ways to spot victims, the methods used to trap victims, available assistance for victims, where traffickers look for victims, and what citizens can do to help combat the problems. Human trafficking includes both sex trafficking and labor trafficking. While we concentrated on sex trafficking, some of the data includes those forced to work jobs they otherwise would not do.

Chemistry

Recreating the Medieval Artist's Palette
Presenter: Doug Ridolfi

This poster presentation will provide an outline of an exercise related to the reproduction of the pigment and natural binders used in historical illuminated manuscripts. Students are introduced to the microscopic examination of modern pigments and natural binders. Contrast is made between modern day, natural pigments and medieval period pigments where grinding methods produced coarser pigments with a wider distribution of particle sizes and the presence of contaminants. Natural binders are prepared from egg white and egg yolk and students are provided with a natural binding agent for microscopic examination of pigments. Students are also taught how to transfer images using Armenian bole and carbon transfer methods. Gold inlay methods using sheet gold is also practiced. Students have the opportunity to compare their microscopic observations of their created works with leafs from genuine illuminated manuscripts. Through laboratory exercises such as this, students can visually inspect historical documents such as illuminated manuscripts and can examine selected features of such articles to better appreciate the workmanship that went into preparing these materials. It provides students with insights into distinguishing modern from ancient creations even though both are composed of the same types of materials.
Structure of meldonium (3-(1,1,1-trimethylhydrazin-1-ium-2-yl)propanoate) solvates and binary compounds: an X-ray view of controversial medication

Presenter: Alexander Y. Nazarenko

3-(1,1,1-trimethylhydrazin-1-ium-2-yl)propanoate (1), more known with its commercial names such as meldonium or Mildronate, was originally introduced by Grindeks (Latvia) as an anti-ischemic medication. Recently it achieved controversial publicity as a popular doping compound being abused by hundreds of sportsmen. Banned by WADA, it attracted attention of pharmaceutical and forensic chemists. Crystal structures of mono- and di-hydrates of 1 and its numerous binary compounds with alkali metal and transition metal salts were studied. An investigation of charge distribution in 1 was attempted. Role of hydrogen bonds, especially involving hydrazinium N-H group, is discussed. Carboxylic group serves as an acceptor of hydrogen bonds and/or as a ligand in coordination compounds. Crystalline salts of 2-(2-carboxyethyl)-1,1,1-trimethylhydrazinium, a protonated form of 1, with organic and inorganic anions were also investigated and compared with similar betaine-type compounds. The results support the analogy between 1 and carnitine-type compounds in crystal state. Existence of numerous stable chemical compounds of 1 can partially explain unusually high retention time for remaining traces of it in human body.

Adsorption of Hydrocarbons Present in Gasoline Residues on Household Materials Studied by Inverse Gas Chromatography

Presenter: Jamie Kim

The adsorption of selected hydrocarbons present in gasoline residues on household materials was investigated via inverse gas chromatography (IGC). A series of hydrocarbons (n-heptane, n-octane, n-nonane, toluene, p-xylene, and 1,2,4-trimethylbenzene) and three household materials (carpet fibers, cotton fabric, and cardboard) were used in this work. IGC measurements using columns packed with household materials were conducted to obtain molar enthalpies of adsorption of these hydrocarbons over the temperature ranging from 40 to 70 °C. Adsorption isotherms and Henry’s law solubility coefficients (S) were also determined at 40 °C. Our results showed that molar enthalpies of adsorption, adsorption isotherms, and solubility coefficients depend on the structures and size of hydrocarbons and the choice of solid substrates. Measured molar enthalpies of adsorption becomes more exothermic with the increase in the size of hydrocarbons, ranging from -23.4 (11) to -40.9 (6) kJ/mol for carpet fibers, from -36.2 (20) to -48.2 (10) kJ/mol for cotton fabric, from -30.1 (6) to -52.5 (24) kJ/mol for cardboard, respectively. From adsorption isotherms and measured retention times as a function of the injection amount, adsorption affinity of hydrocarbons to the carpet fibers is weaker than the affinity between hydrocarbon molecules, producing relatively smaller solubility coefficients for all hydrocarbons than those measured on cotton fabric and cardboard. However, the adsorption affinity of hydrocarbons to both cotton fabric and cardboard was much stronger with increased solubility coefficients presumably due to the diffusion and dispersion of hydrocarbons through solid substrates. In particular, solubility coefficients of three aromatics on cardboard are significantly larger than those measured on carpet fibers and cotton fabric.

Gold Nanoparticles:
Developing a Guided Inquiry Green Physical Chemistry Experiment

Presenters: Maria Pacheco and Robyn Goacher

We present a physical chemistry guided-inquiry laboratory experiment that focuses on the physical process of nanoparticle (NP) aggregation. Gold nanoparticles are formed in solution rapidly and under relatively mild conditions, which allows for ready adjustment of experimental parameters. In this experiment, students act as if they were in industrial R&D to compare nanoparticles synthesized using sodium citrate (traditional NP) against nanoparticles synthesized using extracts from garlic and tea (green NP). Throughout the experiment, students evaluate the traditional
and green NP using qualities that are relevant in manufacturing (synthesis speed/ease, average particle size, particle size distribution, time particles stay suspended, cost, waste management, and PR/marketing appeal). Aside from basic organic techniques, students characterized the NP via UV-visible spectroscopy, Dynamic Light Scattering (DLS) with zeta-potential measurement, and Raman spectroscopy. The experiment was run with two groups at different universities, with students having freedom to develop parameters for better NP synthesis. Student feedback and future modifications to the experiment will be discussed.

**Syntheses of Amino Acid Surrogates Using Buchwald-Hartwig Amination**

*Presenter: Sujit Suwal*

Buchwald–Hartwig amination (BHA) is a palladium-catalyzed coupling of amines with aryl halides. Synthetic utility of BHA stems primarily due to the shortcomings of other aromatic C-N bond formation methods, that often suffers limited substrate scope and functional group tolerance. BHA is, currently, widely used in organic synthesis creating a variety of molecules that have the medicinal and pharmaceutical essence. In our case, we successfully used BHA toward restructuring several aromatic amines into highly functionalized amino acid surrogates that could fuel syntheses of novel peptidomimetics having better pharmaceutical indices. Most importantly, these building blocks allow us designing conformationally constraint oligomers that are cell permeable, proteolytically stable and potentially offer high-affinity protein ligands. Currently, we are optimizing solid phase syntheses of hybrid oligomers that contain natural and surrogate amino acids, as well as assessing mass spectrometric-based sequencing of the resultant molecules.

**The size effect of gold nanoparticle aggregates on near-IR SERS signals**

*Presenters: Jinseok Heo, Ashleigh Coggins, Kris Hoyt*

*Funding Source: Research Foundation Incentive Grant & Undergraduate Summer Research Fellowship*

Raman spectroscopy is an analytical method used to identify chemical compounds. It relies on the Raman scattering signals that contain information on the vibrational energy levels of the compound's chemical bonds. However, a disadvantage of using Raman spectroscopy is that the collected signals are intrinsically weak, which limits its applications for highly-sensitive chemical detection. One way of overcoming this problem is to utilize Surface Enhanced Raman Spectroscopy (SERS). The Raman signals of molecules can be enhanced when they are in close proximity with gold (Au) or silver (Ag) that can show surface plasmon resonance, a collective oscillation of electrons that enhances the electromagnetic (EM) field.

We recently discovered that gold nanoparticles (AuNPs) could be aggregated by quickly freezing their aqueous solution in liquid nitrogen. The quick-freezing method could control the extent of aggregation and create reproducible aggregate samples that are ideal for use in near-IR region SERS. To expand on previous research, we examined the effect of AuNP sizes on their ability to detect Rhodamine 6G (R6G), a well-known Raman dye. AuNP aggregates were made with four sizes of citrate-capped AuNPs: 15, 30, 50, and 70 nm in average diameter. These AuNPs were characterized using UV-VIS absorption spectroscopy and Raman spectroscopy to observe the size effect on the extent of aggregation and the SERS signals in the near-IR region. We discovered that except for the 15 nm AuNPs, the AuNP size did not affect the formation of AuNP aggregates that can be used for near-IR SERS. Another important discovery was that the AuNP aggregates prepared from 70 nm AuNP solution exhibited the best results in terms of the dynamic range and the detection limit.
Open Access is Here to Stay  
*Presenters: Maureen Lindstrom, Joseph Riggie, Hope Dunbar*

Open Access is Here to Stay  
Kristina M. Johnson, SUNY Chancellor, has proposed a resolution that directs "the development of campus-specific open access policies for faculty, students, and staff scholarship and creative works and the creation of searchable repositories." March 22, 2018  
E. H. Butler Library supports open access of scholarship and creative works through the official, searchable, campus repository, Digital Commons @ Buffalo State. Our Digital Commons is host to a wide variety of formats, student scholarship and publications, open access journals edited by Buffalo State faculty, data sets, video recordings, conference sites, special collections, photographs, and many other significant collections that are searchable and available to users worldwide. This poster will set the stage for the mandated campus open access policy to be developed by the library and campus constituents by 2020. We will provide an overview of the tools, solutions, and content types that will be important considerations in the development of our campus policies. Use statistics will show just how accessible our content is from anywhere in the world and indicate the overwhelming potential open access provides to information seekers.

Earth Sciences and Science Education

Taking Laboratory Science Home  
*Presenters: Joseph Zawicki; David Abbott, Physics; Lukasz Ziarek*  
*Funding Source: SUNY Innovative Instructional Technology Grant*

As part of our IITG grant “Taking Laboratory Science Home,” we are developing science lab activities that can be done entirely online. Our current efforts have focused on the development of laboratory activities developed for and trail tested in SCI311, a problem-solving class in physical science. The course is developed for pre-service science teachers. The ultimate project goal is the creation of laboratory activities that address a broad range of concepts (light, sound, energy) using commonly available or very modestly priced resources to investigate fundamental phenomena following the best practices established. Critical project components include the exploration of phenomena, video documentation of data collection, data sharing, synchronous and asynchronous aggregate data analysis, communication and participant discussion and the development and construction of rigorous, conceptual understandings.

Economics and Finance

Empirical Analysis on Competition among Railway, Highway and Civil Aviation in the Passenger Market in China—From the Perspective of Railway Industry Regulatory Reform  
*Presenter: Qing Guo*

State Railway Administration and China Railway Corporation was set up in the institutional reform of the State Council of 2013 in China, the former is a component department of Ministry of Transport of the People's Republic of China, and the latter is an enterprise. Although the isolated roles of the government from enterprise were achieved through reform by creating an independent regulatory agency, the industry is still monopolized by one operator. It is necessary to introduce competitive mechanisms in Chinese railways. There are four kinds of way to introduce
competitive mechanisms in railways. The first way is on-track competition, which separate infrastructure management from transport operation. The second way is parallel competition. The third one is competition for the market. The fourth one is yardstick competition. The empirical analysis of competition pattern among railway, highway and civil aviation shows: The competition between railway and highway in short-distance market focuses on price and network scale; The competition among railway, highway and civil aviation in medium-long distance market mainly focuses on price, and also on network; In long-distance market, the competition between railway and civil aviation focuses on price and speed. This paper suggests that the intermodal competition should be highly valued, and the new regulation agency of railway should design the regulatory policies based on intermodal competition.

The provincial interdependence and China’s “irrational” OFDI

*Presenter: Xingwang Qian*

This paper studies the interdependent behavior of Chinese provincial OFDI and a plausible consequence of such interdependency. We find the OFDI from one province positively depends on neighboring provinces’ OFDI. While the spillover from neighbors’ behavior increases provincial OFDI, it tends to lead to more OFDI than that is warranted by economic fundamentals, resulting in irrational OFDI. We argue that the “follow the leader” firm behavior and the OFDI promotional policies under China’s political tournament environment give the rise of the neighboring interdependence. The provincial OFDI interdependence are confirmed by using various regression methods, measures of neighboring effect, and data of Chinese provincial OFDI. Further, based on the estimated results, we make a plausible estimation for the amount of irrational OFDI in China in 2017.

Elementary Education, Literacy, and Educational Leadership

Social Studies Curriculum Integration: Classification, Framing, and Teacher Autonomy

*Presenter: Adam Huck*

As public policy has prioritized math and English language arts, instructional time dedicated to social studies has diminished. Through a weakened classification of subjects (Bernstein, 1975), integration of social studies with English language arts presents an opportunity to increase the breadth and depth of instruction that more closely aligns with National Council for the Social Studies (2009) recommendations. Weak classification structures within the classroom provide opportunities for interdisciplinary approaches, but strong framing of content is evidenced in scripted, mandated curricular programs. This study explored the mandated implementation of Expeditionary Learning modules in two third grade classrooms in a Western New York district. A qualitative, multi-case study design investigated teachers’ perceived increases to elementary social studies instruction time and quality. Additionally, the extent of teacher autonomy was investigated in the enactment of a mandated curriculum. Findings demonstrated that the integration of social studies with English language arts was perceived as an increase in instructional time and an improvement in instructional quality. However, lessons were unbalanced and a loss of a dedicated social studies instructional period hampered student acquisition of background knowledge necessary for interdisciplinary lessons. While working from a scripted program, administrative messaging signaled opportunities for limited teacher autonomy.
A Comparison on Elementary Mathematics Textbooks among U.S., Mainland China, and UK

Presenter: Jing Zhang

Given the influence of textbooks on instruction, makes it imperative that high quality textbooks are available for use in our classrooms. Unfortunately, analyses of U.S. textbooks repeatedly has found that they are not as focused as other countries tending to cover many topics but not fully develop the content deeply, and are too long. Common Core Standards also calls a shift to focus deeply on only the concepts that are prioritized in the standards so that students reach strong foundational knowledge and deep conceptual understanding and are able to transfer mathematical skills and understanding across concepts and grades. This study compares elementary mathematics textbooks among three countries: Eureka Math from U.S., New Century Math from China, and Power Maths from UK. The sequence and development of mathematical concepts are discussed.

The Impact of Internationally Trained Educators on Youth at Risk, including Refugee Population in the U.S.A. classrooms.

Presenters: Hibajene Shandomo and Phylicia Brown

Funding Source: CDHS

To respond to the need to more fully prepare candidates for the diversity they will experience in current classrooms in the U.S., some teacher candidates at SUNY Buffalo State have been involved in a culminating program, a teach and study abroad experience, between SUNY Buffalo State and the University of Zambia. Between May 2012, and June 2018, 50 Buffalo State students and four professors traveled to Zambia for the international experience. While this program is ongoing, its impact has not been systematically measured. It is imperative that the program goals and impact be measured and reported to SUNY Buffalo State and beyond. The purpose of this research study is to investigate the impact of internationally prepared (trained) educators/teacher candidates on racially, ethnically, culturally and linguistically diverse populations and Youth at Risk including refugee populations in the U.S.A. classrooms. The methodological approach for this study was qualitative. Purposeful sampling was used to determine the 10 participants in this study. The participants were accessible teacher candidates who had travelled to Zambia with the International Professional Development Schools Program (IPDS) between 2012 and 2018. Another criteria was to include teacher candidates who were teaching diverse populations, Youth at Risk or immigrant children, since their return from Zambia. A survey to determine the impact of these internationally prepared educators on racially, ethnically, culturally and linguistically diverse population was administered to all 10 participants. The poster will share specific benefits that teacher candidates and teachers who have had cross-cultural or international experience in Zambia share in their U.S. classrooms. One participant wrote, “Having a global experience allows me to introduce my students to the world. This is very important for students who live in impoverished conditions. Through our global projects, my students got to know that the world is “bigger” than the neighbourhoods in which they live.” Another former teacher candidate who teaches in an urban school wrote “The educational landscape in Black and Brown neighbourhoods in the U.S. is very much like in Zambia...Partaking in the Zambia IPDS, helped me to realize, even the more, that issues of education and poverty are systemic—that what it will take to improve the system of education in Zambia is what it will take to improve the system of education in Philadelphia, Detroit, Chicago, Oakland, and even Buffalo.” One teacher candidate concluded, “Having traveled to developing countries such as Zambia, through the IPDS program, instilled confidence and resilience in my personal and professional settings. In particular, these gained attributes were applied to my student teaching placement where I was challenged with a class of diverse learners. Where most would look at this placement as impossible or defeating, I remained positive and took my placement as a challenge... I wanted to make a difference in the students' lives academically and personally. Exposure to international school settings has transfigured my pedagogical practices in a diverse, compassionate, and confident way. Applying these experiences into classrooms and instruction allows for enriched and powerful teaching.”
Condensation and Evaporation Characteristics of Flows Inside Vipertex 1EHT and 4EHT Small Diameter Enhanced Heat Transfer Tubes

*Presenter: David Kukulka*

Results are presented here from an experimental investigation on tubeside condensation and evaporation heat transfer that took place in three Vipertex stainless steel enhanced heat transfer tubes (1EHT-2, 2EHT-2 and 4EHT). Equivalent outer diameter of the tube was 9.52 mm (0.375 in) and the inner diameter was 8.32 mm (0.3276 in). The test apparatus included a horizontal, straight test section with an active length heated by water circulated in a surrounding annulus. Constant heat flux was maintained and refrigerant quality varied. Condensation experimental runs were performed using R410A as the working fluid; over the inlet quality range of 0.2–0.8; for mass flux values that ranged from 150 to 460 kg/(m² s). In a comparison of condensation heat transfer performance, the enhanced 1EHT-1 tube has best heat performance followed by the enhanced 4EHT tube and finally the 1EHT-2 tube. The highest pressure drop increase was seen in the 1EHT-1 tube followed by the 4EHT tube and the 1EHT-2 tube. The evaporation experiments were performed using R410A at a constant saturation temperature of 279 K; for a mass flux that ranged from 160 to 390 kg/(m² s). Inlet and outlet vapor qualities were fixed at 0.2 and 0.8, respectively. As the mass velocity increased, the heat transfer coefficient and pressure drop penalty increase accordingly. Experimental results show a slightly larger pressure drop in the 1EHT-1 tube. The pressure drop in the three EHT tubes could be attributed to the dimples and protrusions in the surface structure, which produce an increased density of nucleation sites. In addition, it was found that the evaporation pressure drop increases with the increasing depth of the dimples. Condensation and evaporation performance is mainly due to the increase in the heat transfer surface area and the increase of interfacial turbulence; this produces flow separation, secondary flows and a higher heat flux from the wall to the working fluid. Enhanced heat transfer tubes are important options to be considered in the design of high efficiency systems. A wide variety of industrial processes involve the transfer of heat energy during phase change and many of those processes employ old technology. These processes are ideal candidates for a redesign that could achieve improved process performance. Vipertex enhanced tubes recover more energy and provide an opportunity to advance the design of many heat transfer products.

Testbed for Transactive Energy and its Effects on the Distribution System and Protective Devices Settings

*Presenters: Ilya Grinberg and Radomir Pupovac*

*Funding Source: Electric Power Research Institute (EPRI)/Center for Grid Engineering Education (GridEd)*

The introduction of renewable resources is leading to significant variability in supply. This, in turn, leads to necessity of balancing supply and demand. Penetration of renewables to distribution level, including microgrids, requires new approaches to maintain distribution systems balanced and reliable. This is a complicated and challenging process that necessitates an increased level of sensors, measurements, monitoring, and protection coordination among other aspects. Integration of renewable resources with the grid is also associated with a new economic model. Move to Transactive Energy requires novel approaches in power systems design and operation, especially on a distribution level. Another important aspect of penetration of renewables is the effect on protective relays settings, especially at the distribution level. Investigation of effects of renewable distributed generation and possible solutions require pilot projects and testbeds. The purpose of the project was to design and implement a testbed to study the effect of the Transactive Energy concept and to assess the impact of Distributed Generation (DG) on the microgrid and protective

27
devices settings. Physical modeling of the microgrid with DG resources was performed using Smart Grid Lab at SUNY Buffalo State. ETAP® simulation program was utilized to simulate proposed testbed and to compare simulated results with parameters of the testbed. The testbed was developed using various state-of-the-art laboratory modules, such as microgrid controller, Double-Fed Induction Generator (DFIG), PV systems with grid inverter, underground line module, and a number of smart meters and sensors. Monitoring and control utilized Supervisory Control and Data Acquisition System (SCADA). Data were collected and analyzed for both simulated and physical models of a microgrid with a variety of distributed renewable resources. The project resulted in a testbed to demonstrate the effects of distributed renewable resources on the balanced operation of the distribution system/microgrid as well as effect of distributed generation on protective devices settings. The project was part of senior design course with associated assessment of student outcomes and was supported by a grant from Electric Power Research Institute (EPRI) and its Center for Grid Engineering Education (GridEd).

Improving Adaptive Sports through Ergonomics and Standards

*Presenter: Elizabeth O’Neill*

Research and developing standards for adaptive sports equipment involves more than just paperwork. Field studies, human surveys, equipment testing will all be used to improve ergonomic design and function of adaptive ski equipment. Field studies of regular users will help us understand and suggest future standards development. Measuring useful life of equipment that sustains extreme temperatures will be another aspect of this testing and field study. All aspects of human use, wear of adaptive sports equipment, including all those who use it (instructors too) will be collected for analysis and suggested future improvements.

The next Solar Frontier: Non-Lead based Perovskite Solar Cells in Tandem Devices

*Presenters: Saquib Ahmed and Jon Shaffer*

Perovskite solar cells are especially promising when considering the technology lifespan. The advantages of using perovskite for the active layer include, but are not limited to, a broad light absorption spectrum, tunable band gaps, long charge carrier diffusion, and low fabrication cost. The current project involves the design and simulation of different configurations of Methyl Ammonium (Bismuth/tin/antimony) Iodide active layer based lead-free perovskite solar cell. The goal of the project is to develop a configuration that is non-toxic as well as stable in natural open air environments with a specific resistance to moisture. The project also includes opto-electronic simulations of a variety of different configurations using two software packages. The stacking structure is modulated within the cell by progressively including a recombination-inhibiting thin TiO2 or ZnO layer on top of the FTO, followed by an electron-transport layer (various oxides). The aim of these studies is to delineate the sources and quantify the impacts of efficiency-limiting process such as recombination. This work is intended to build up to a broader project of selecting the most optimal low-toxicity perovskite cell to stack onto a Si bottom cell for tandem configurations.

Wireless System Development for Materials Nondestructive Inspection

*Presenter: Jikai Du*

In this research, a prototype for wireless eddy current inspection system was designed. An eddy current probe interface and a main unit interface were developed, where Ultra Wide Band wireless communication technique was applied due to its high data rates and communication range. The main advantages of such wireless probe are safety, economic benefits and maneuverability when compared to conventional wired probe. During testing, the frequency-optimized signals were first activated at the probe interface, which can interact with materials properties and be used for defect inspection. The signals were then measured, digitized and transmitted wirelessly to the main unit interface. At the main unit, the signals were further converted back to analog signal for a normal display on monitor and for the quantitative
evaluation of material properties. In our experiments, this wireless system was applied on different conductive materials for conductivity measurements and on a plate and a cylinder for the quantification of various types of surface defects. Testing results showed that factors such as wireless communication distance and obstacles in between the probe and main unit have very small influence on wireless signals, signal distortions such as time delay, amplitude drop, phase shift and digitization effects exist and can be quantified. Such wireless technique has the potential to be applied to other materials inspection techniques such as ultrasound technique and to the on-site automatic inspection of various aircraft structures.

**Experimental Demonstration of Temperature Control by Arduino System**

*Presenter: Qing Hao  
*Funding Source: Buffalo State Research Incentive Funds Program*

This project describes the design, construction, and the programming process for Arduino control system that can monitor and automatically maintain the temperature of thermal system. A temperature sensor is installed in board, controlling the environment temperature by a closed loop control system. When the temperature is higher, a fan will start to speed up, increase the heat transfer coefficient; and when the temperature is lower, a light bulb will be switched on to heat up the temperature. The control system is accomplished by Elegoo (Mega2560) Arduino programming. This project is an experimental demonstration for convection heat transfer and students can calculate the time for the thermal switch to cool down by theory and compare to this demonstration.

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**Exceptional Education**

**Increasing Student Engagement and Individualized Feedback in an e-Learning Environment**

*Presenters: Dr. Lisa A. Rafferty; Andrew Chambers, RITE Services  
*Funding Source: Fostering Innovation in Teaching with Technology (FITT) Academy*

Adaptive learning is a computer-based and/or online educational system that modifies the presentation of material in response to student performance. The purpose of this FITT Academy Project was to develop an adaptive learning, mini-lesson that was included in an online module, in a graduate level course. The team will present pre- and post-assessment data collected, in addition to social validity data. They will also discuss "lessons learned."

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**Fashion and Textile Technology**

**How is artificial intelligence (AI) reinventing fashion retailing?**

*Presenter: Keunyoung Oh*

The fashion industry has recently faced dramatic changes driven by digital technologies and data management. The fashion industry needs to find a balance between technology and the fashion industry as technology is not an exogenous force over that the fashion industry does not have control. Among the new technological developments amid the fourth industrial revolution, artificial intelligence (AI) has been changing the fashion retailing business model, how and what to offer to fashion consumers and how to be connected with consumers. It is well predicted that the AI market will become worth more than $47 billion in 2020 growing from an $8 billion market in 2016 (Ambastha, 2017). Consumer experience or engagement plays a role in today’s fashion retailing. As most apparel brands have begun experimenting
with AI, the customer-brand relationship has been moving from transactional to conversational and interactive. With the help of creative algorithms and machine learning, AI programs and systems are developed to perform tasks and react like humans. The more data it receives, the more human-like cognitive processing is possible. AI can even predict what a consumer may need in a more accurate way. While AI technology has been around for a while, the apparel retailing industry is now jumping on the bandwagon. Reviewing the currently available AI applications in apparel retailing can be very timely and informative.

More than rubber: Fashionable overshoes and their manufacture in the late 19th and early 20th centuries

Presenter: Arlesa Shephard

The history of rubber footwear is closely aligned with the history of rubber and is often omitted from discussion or briefly mentioned in works about the footwear industry. Unlike leather and fabric shoes which were sewn and required less skill by the end of the 19th century, rubber footwear manufacturing was more complex. The rubber shoes contained many components other than rubber including fabric linings and sometimes fabric or leather uppers. The purpose of this research is to better understand the materials and methods used in the manufacture of rubber footwear around the turn of the 20th century. This research uses an object-based and a history-based approach by examining both artifacts and historical documents to better understand the materials used, manufacturing processes, and the context in which rubber overshoes were produced. Existing rubber shoes and shoe samples were examined in addition to an exploration of catalogs, trade cards, and other historical documents to better understand the materials and manufacturing processes used to create these shoes. By the late 19th century, people from all levels of society had disposable income to invest in shoes for a variety of occasions. Rubber shoe firms became vertically integrated by purchasing companies that manufactured components for their shoes, such as felting plants for linings. Other industries fed into the rubber shoe industry including cotton, woolen, and knitting mills because these helped to supply linings and shoe uppers. A variety of fabrics were used to create a more fashionable looking rubber shoe. By the early 1900s, a wide variety of styles and shapes were available to keep up with fashionable shoe trends.

Geography and Planning

Creosote bush (Larrea tridentata) ploidy history along its diploid-tetraploid boundary in southeastern Arizona-southwestern New Mexico, U.S.A.

Presenter: Camille A. Holmgren

Funding Source: Buffalo State Sabbatical Leave, SNSS Travel Award, and UUP Individual Development Award

Creosote bush (Larrea tridentata) is a dominant shrub in the warm deserts of North America and also a classic example of an autopolyploid complex. We determined ploidy levels for creosote leaves preserved in ancient packrat middens from the Peloncillo Mountains, AZ to better understand the history of ploidy race distribution along its diploid-tetraploid boundary. We also measured modern creosote ploidy level at several sites spanning the AZ-NM border to augment sampling in this large geographic area. Modern plants were mostly diploids, with tetraploids only observed in our northernmost sites. Ancient creosote from the Peloncillo middens (3170-145 cal yr BP) were all diploids. Modern creosote at the Peloncillo site is also diploid, but with significantly larger guard cells areas that may be a response to increasingly hot, dry conditions. The lack of tetraploids in the midden fossils suggests the arrival of tetraploids at their eastern margin may have occurred only recently, mirroring the late arrivals of other Sonoran Desert plants along the AZ-NM border.
The “Historic Period” of Buffalo NY’s Office of the National Weather Service

Presenter: Stephen Vermette

WNY’s official weather/climate record is based on observations made by the Buffalo Office of the National Weather Service (NWS). This office has been the region’s official record for almost 150 years, but this record is bimodal – divided between the “historic” record and the “modern” record. The historic record includes the initial 74 years when the observing station was located in downtown Buffalo, whereas the modern record includes observations taken at the Buffalo Airport (74 years to-date). Recognizing that “military discipline would probably secure the greatest promptness, regularity, and accuracy in the required observations” of weather, implementation of a newly-passed Congressional resolution to enact a national weather network fell to the U.S. Army Signal Service’s new “Division of Telegrams and Reports for the Benefit of Commerce” – the initial name of what today is referred to as the National Weather Service. Brevet Brigadier General Albert J. Myer, a resident of Buffalo, NY, served as the network’s first Chief Officer. Buffalo’s U.S. Army Signal Services weather station first opened its door on November 1, 1870, among the first in the country, and in the presence of General Myer. The station’s first location, and subsequent moves over the next 70 years, was in downtown Buffalo. Between 1870 and 1943, the Buffalo weather office had moved between seven different buildings before its final move to the Buffalo Airport. This poster explores this “historic,” mostly forgotten, period of Buffalo’s official weather station, as taken from the book “The Face of WNY’s Weather,” by this author.

Time scale and time sensitivity in geographic information analysis

Presenters: Tao Tang and Jiazhen Zhang

In the geographic or GIS studies, it is essential to implement spatial scale or map scale for the spatial analysis. Time measures or time scales of geographic events or processes are normally under-illustrated in the researches although spatio-temporal analysis, event-driven GIS, and dynamic modelling and simulation have been emphasized for a long time. This study attempts to utilize ontological methods to identify and implement the time scale of durations on the studies of geographic processes. Representations of time in this research are classified into 1) Time-interval, 2) Time-duration, 3) Time-point, and 4) Time-dimension. Time-scale refers the size of temporal intervals either built subjectively or objectively for measuring geographic processes or events. Three types of time scales were identified in sensor detections: 1) existence duration, 2) sensor observation duration, and 3) validity duration. The existence duration in time scale system represents the original factor of a geographic event, sensor observation duration designed by researchers is a “tool” to search the validity duration, and validity duration quantifies a theory can be hold true only during a certain period and at a certain time scale interval. Two experimental researches of time scale sensitive sensor deployment were conducted; 1) Spatial and Temporal Changes of Parking Lot Land Use at SUNY Buffalo State, Applying a UAV Remote Sensor, and 2) Spatial Analysis of Distributions and Habitat Conditions of Fallopia japonica (Japanese knotweed) Invasive Species Applying UAV Remote Sensing. Both spatial and time scales are significant in data collecting, analyzing, and geographic event modeling. Geographic processes or events are both spatial and time dependent. Geographic processes or events may behave differently not only at different spatial scales, but also at different time scales. Two experiments in this research demonstrate that 1) capture of brief time scale data is significant in studying the geographic events to understand what is happening; 2) time sensitive sensor building is not only very useful to identify event locations, but also important to enhance and validate event descriptions otherwise would not be possible; 3) It is significant for geographic information studies to capture and analyze both spatial patterns and processes at different scale of time durations or at concurrent time point.
Popenaias popeii - the first endangered freshwater mussel in Texas
*Presenters: Alexander Y. Karatayev; Lyubov E. Burlakova; Mary Perrelli, Geography and Planning; Elsa Froufe; Arthur Bogan; and Manuel Lopes-Lima*
*Funding Source: U.S. Fish and Wildlife Service and Texas Parks and Wildlife Department (TPWD)*

Although freshwater molluscs in the order Unionoida are considered one of the most endangered groups of animals in the world, sufficient data on their status are lacking for most species. As a result, a species may become rare, endangered, and even extinct before the first population assessment is conducted. This is especially true for endemic species, particularly those limited to remote regions with difficult access. We studied the current distribution and population densities of *Popenaias popeii* endemic to the Rio Grande drainage in Texas, and developed a method to evaluate changes in the population’s size and distributional range over the last 100 years. Sampling over 250 sites in four rivers that constitute the entire historical range of *P. popeii* in Texas, we found that this species has likely been extirpated from two rivers. The total length of the rivers populated by this mussel has declined by 75%, and the total *P. popeii* population size has declined by 72%. The remaining population of this species in the Rio Grande is fragmented, with only one 190-km stretch still supporting high densities. The developed approach could be used for other rare freshwater molluscs to reconstruct their historical range and population size. The results of our surveys (funded by the U.S. Fish and Wildlife Service) were used to declare *P. popeii* in 2018 the first endangered freshwater mussel species in Texas.

A new freshwater bivalve species from Texas
*Presenters: Lyubov E. Burlakova, Alexander Karatayev, and Elsa Froufe*
*Funding Source: U.S. Fish and Wildlife Service*

Of the 14 Cyclonaias species recognized in the last revision of the freshwater mussels family Unionidae in North America, six occur in Texas. One of these species is the Texas Pimpleback *Cyclonaias petrina* (Gould 1855) distributed across the Colorado and San Antonio/Guadalupe River systems. However, specimens recently collected in the San Marcos River in the San Antonio/Guadalupe River Basin, revealed clear differences from *C. petrina* and was described as a new species based on shell morphology and molecular barcoding analyses. This new species has been split from *Cyclonaias petrina* which is listed by Texas Parks and Wildlife Department as legally threatened. Considering the restricted range, we suggest both species *C. necki* and *C. petrina* warrant listing as endangered. To recognize the extensive work on ecology and distribution of Texas unionids we named the new species for Dr. Raymond W. Neck.

Using underwater imagery to monitor invasive species in the Great Lakes
*Presenters: Knut Mehler, Lyubov E. Burlakova, Alexander Y. Karatayev*
*Funding Source: Ecological Greenway Fund, Environmental Protection Agency*

Underwater imagery has become a popular tool to assess a wide variety of questions in marine and freshwater ecosystems, offering many advantages over traditional sampling and monitoring. Underwater imagery including stationary or towed camera platforms and remotely operated vehicles in combination with hydroacoustics and side scan sonar can be used to monitor benthic substrates, delineate benthic habitats, manage benthic resources, designate protected areas such as marine sanctuaries, and monitor the spatial distribution of bottom-dwelling organisms. Here, we show results from surveys (in Lake Huron, the Niagara River, and Lake Michigan using underwater videos to monitor *Dreissena bugensis* and *Neogobius melanostomus*—two of the most aggressive invaders in the Great Lakes. The advantages of underwater imagery over traditional sampling methods include cost and time efficiency, coverage of larger survey areas, and increased accuracy in determining presence/absence. Further, the videos can be imported into an image
analysis software to characterize *D. bugensis* clustering or *N. melanostomus* size frequencies. By using underwater imagery in tandem with traditional sampling and image processing software, large areas of benthic environments can be surveyed in a non-destructive and time-and cost-efficient way.

Creating Great Lakes DNA Barcode Reference Library

*Presenters: Susan E. Daniel, Lyubov E. Burlakova, Alexander Y. Karatayev, and Knut Mehler*

*Funding Source: U.S. EPA, Great Lakes National Program Office (GLNPO)*

The research and development of DNA-based tools has recently improved both their sensitivity and costs. This technology has the potential to be useful in the early detection of aquatic invasive species, and can increase the scope of surveillance compared with traditional sampling approaches. The development of more complete species-specific libraries of DNA signatures is an essential step to enable more taxonomically rich and spatially extensive species surveillance and monitoring programs in the Laurentian Great Lakes. The Great Lakes Center at SUNY Buffalo State aims to expand the taxonomic coverage of The Barcode of Life Database (BOLD) DNA barcoding reference library and has assembled a large collaborative team including leading barcoding and taxonomic experts for a wide diversity of targeted taxa. By preliminary estimations, over 80% of Annelida, 50% of Mollusca, and 70% of other taxa (Bryozoa, Cnidaria, Kamptozoa, Nematomorpha, Nemertea, Platyhelminthes, and Porifera) known from the Great Lakes lack catalogued barcodes. In 2017-2018 we collected over 100 samples in the Great Lakes and their watershed and identified over 50 species needed for barcoding, and are analyzing the first results of genetic analysis.

Health, Nutrition and Dietetics

Risk of substance use and mental health outcomes among military spouses and partners

*Presenter: Jessica Kulak*

*Funding Source: National Institute of Drug Abuse of the National Institutes of Health; Health Resources & Service Administration*

Aims: Spouses/partners of military service members face unique stressors compared to civilians. However, multiple sources point out that evidence on substance use among military spouses is rare, and there is a need for more research directed specifically at spouses. Therefore, the aims of this project were to characterize substance use among a sample of military spouses/partners, and explore the relationships between their substance use/mental health and their military partner’s service experiences. Methods: Data were drawn from the baseline wave of Operation: SAFETY (Soldiers And Families Excelling Through the Years), an ongoing longitudinal study examining health among U.S. Army Reserve/National Guard soldiers (USAR/NG) and their partners. The present sample was comprised of 344 civilian spouses married/living as married to current USAR/NG soldiers. Paired t-tests were used to compare mean spouses’ substance use and mental health as a function of spousal soldier’s 1) deployment status (no/yes); 2) number of deployments (one/multiple); and 3) deployment operation (Enduring Freedom (OEF)/Iraqi Freedom (OIF)/New Dawn (OND), compared to all others). Results: Civilian spouses/partners of USAR/NG soldiers currently smoked cigarettes (15.1%), met criteria for problem drinking (12.5%), and used illicit (7.0%) and nonmedical use of prescription drugs (7.6%). Mental health and substance use did not statistically differ by deployment status or times deployed. Spouses whose soldier had OEF/OIF/OND deployments had higher mean depression (p<0.05) and marginally higher anger scores (p=0.08). Current tobacco use was highest for spouses of soldiers with non-OEF/OIF/OND deployments (p=0.05). Conclusions: Civilian spouses/partners of USAR/NG soldiers are at risk of substance use and mental health conditions. Our findings suggest that simply being married to a soldier is stressful, and whether or not that soldier was deployed, or the number of deployments, may not matter. These findings underscore the importance of support initiatives focusing on all military spouses, not just those of deployed soldiers.
Relative Fat Mass Utility in Athletes

Presenters: Leah M. Panek-Shirley, Jared White, Benaleo Daniels

Relative fat mass (RFM) has recently been introduced as a possible alternative to BMI with increased prediction accuracy in regards to health risk. Despite high levels of cardiorespiratory fitness and muscular strength and endurance, many athletes’ body mass index indicates overweight and obesity. No known literature exists comparing BMI, body fat percentage, waist circumference, waist-hip ratio (WHR), and the newer RFM among this often mis-classified population. This project will describe relationship of current measures adiposity as well RFM in Division III collegiate athletes. The sample (N=130) was mostly (83.8%) male. On average, athletes had BMI 27.7 kg/m2, overweight; WHR 0.83, low risk; body fat 18.3%, lean to moderately lean; RFM 23.5, low to moderate risk. RFM indicated 32.8% were obese which most closely agreed with body fat % of excess or risk fat levels among 32.1% of athletes. This findings add to the initial body of literature while adding information on the utility of RFM for assessing health risk among athletes.

City and Forest Invaded: Orange Trees, The Gendered Paraguayan Landscape and Pleasure from the Mid-Nineteenth to the Mid-Twentieth Century

Presenter: Dr. Bridget María Chesterton

Non-native orange trees became the dominate landscape feature noticed by foreign tourists and travelers in Paraguay in the mid-nineteenth century. This study tracks how these trees transformed both urban and rural environments in Paraguay evoking a sense of pleasure and tranquility into Paraguayan life. These images and descriptions of Paraguay were pervasive in travel narratives, images in academic articles, the foreign media, and foreign advertisements for Paraguayan products.

Menstruation States in the Classroom Building, Buffalo State

Presenter: Dr. Bridget Maria Chesterton

Around the globe—on any given day—approximately 17.3% of women are menstruating: that is 334 million women. While bathrooms across the globe provide toilet paper, the needs of 17.4% of the population is ignored—and all too often taxed. In the fall semester of 2017 I established pad and tampon boxes for women who use all three restrooms in the Classroom Building to use free of charge. Since, I have distributed approximately 8,000 tampons and 4,000 pads. This should not be a “odd” occurrence. Public restrooms that provide toilet paper should provide pads and tampons. Menstruating women are not a nuance. We are your mothers, daughters, wives, sisters, and friends. You are here because of menstruation. Consider donating to my cause or start your own “Menstruation Stations” in your Buffalo State building.

‘So very unequal to the place’? The Legal Apprenticeship of John Williams, Lord Keeper, c. 1605-1621

Presenter: Andrew Nicholls

In the spring of 1621, James I sent the Great Seal of England to his newly appointed Lord Keeper, John Williams, the Dean of Westminster. Naming an ecclesiastic to this position shocked contemporary legal and political commentators, and subsequent historians have generally shared this negative appraisal. Even more positive analyses have held that Williams’ primary attraction for the king lay in his intellect and learning, and an expectation that he would do James’
bidding on the Court of Chancery. Williams possessed both stronger legal qualifications than have traditionally been recognized, and a politico-legal philosophy that had helped to modify James' own views of the role of his prerogative courts and powers. Furthermore, it will be seen that Williams' career prior to 1621 featured four distinct and formative stages of legal experience and training that cumulatively helped to better prepare him for higher service in 1621 than has usually been allowed. Overall, the appointment underlines the importance that James VI/I placed upon the utilization of clergy in civil roles in early modern Britain, and provides additional perspectives on the intersections of church and state under the early Stuarts.

Hospitality and Tourism

Understanding Chinese Perceptions toward Croatia Medical Tourism: A Fishbein Model Based Competitive Analysis

*Presenters: Chenchen Huang and Christine Lai, Business*

The purpose of this research is to study the Chinese perception toward tourism to Croatia, specifically medical tourism to the Kvarner region. While the Chinese outbound medical travel market is very large and growing rapidly, it is a very competitive market. Therefore, it is important to conduct marketing research to understand the Chinese tourists and medical tourists. In June 2018, a semi-structured interview format was used to allow Chinese nationals in a Beijing university classroom setting to freely discuss their impressions and opinions regarding medical tourism. Data was collected by a distributed questionnaire and researcher led discussion. As a result, of this June pilot study, the survey instrument was refined and another larger pilot study with approximately 100 survey participants will be conducted in Beijing in September 2018, before the final draft of the survey is launched in Beijing. The findings of the final draft study launch can provide practical applications to better serve the Chinese outbound medical tourist target market.

Institute for Community Health Promotion

Women's Leadership by Numbers – WNY Women's Foundation ALL IN Initiative

*Presenters: Alban Morina and Alan M. Delmerico*

While women make up almost half of the U.S. labor force2, 49% of the college-educated workforce3, and 53% of all professional-level jobs4, American women lag substantially behind men when it comes to their representation in leadership positions. As a result, ALL IN is a collaborative economic justice initiative led by the WNY Women's Foundation designed to build the female leaders the region needs. ALL IN asks Western New Yorkers to engage in a community wide commitment to equity by investing in purposeful efforts to empower women and illuminate pathways for them to lead. While Census Bureau, U.S. Equal Employment Opportunity Commission, and the Department of Labor show regional, state, and national level data for women's leadership by numbers, it is up to us to better understand the current representation of women in leadership roles at a local level. These synthesized data help us answer questions such as, “How are we doing when it comes to employing women in positions of power compared to our peers?” Through data collection with participating organizations and agencies we will have the ability to better hold ourselves accountable to this question while using our knowledge to develop and implement strategies to make a difference for women in both the private and public sectors.
Developing Electronic Mapping Applications to Assist in Research Projects
*Presenter: John Petrocelli*

*Funding Source: National Institutes of Health*

In 2015, the Research Institute on Addictions at the University at Buffalo approached us about creating a web-based, data mapping and geospatial analysis application for their NIH-funded, longitudinal child-development research study, known as Developmental Pathways of Violence and Substance Use in a High-Risk Sample. This study focuses on the association between early risk factors (including pre/perinatal) and weapon carrying, victimization, and substance abuse later in life. All of the adolescent participants in this study come from high-risk households. They’ve all been part of this study since birth. This system was developed to help better understand the spatial outcomes of this population. As part of the adolescent phase of this study, we’ve developed a system that tracks where the participants go throughout a typical week, known as their “Activity Space.” In order to accomplish this, the participants are asked questions about where they typically go throughout the week, how often they visit, and their perception of safety and exposure to crime at and around those locations as well as when traveling to those locations. They’re also asked to physically plot all of those locations on an electronic map. This allows us to track several factors including how much time they’re spending in high risk areas. This application utilizes an ESRI ArcGIS web-map in conjunction with a Microsoft ASP.Net based questionnaire. The system also utilizes the ArcGIS JavaScript API, an extensive API that allows maps to be displayed and interacted with on the web. When discussing each location, the map automatically navigates and zooms to that location to make it easier to find. When plotting locations, the respondents can find locations by searching for its name and/or address, or by dragging the map to the appropriate area. The map also has a panoramic street view, running on Google Street View, attached to it, so that users can see what the area looks like as if they were there in real life. This makes it much easier to find locations when a respondent doesn’t know the address or even exactly what street it’s on. They can virtually “walk” to the location from another location, such as their house, as if they were actually traveling there. For example, they may know that their friend’s house is a few blocks away and how to get there, but not know exactly what address or even what the street is called. This tool allows them to follow the same route they would normally take to get there. In the end, it’s all about creating a simple interface for the end-user.

On-premise alcohol availability weighted by sales volume and criminal activity in Austin, TX
*Presenter: Alan M. Delmerico, PhD*

On-premise alcohol availability is associated with numerous negative outcomes including underage drinking, impaired driving and in particular, alcohol-related violence. Presently, measures of alcohol availability are in the form of counts of outlets adjusted for population size or density, the road network or geographic area. Unfortunately, these measures do not take into account the volume of alcohol sales and can only be differentiated by alcohol sales license type and in some cases the physical size of the establishment. Sale volumes for alcohol by establishment (typically unavailable from Alcohol and Beverage Control bureaus) can serve as a magnitude parameter for models in order to adjust for the size of the establishment’s role in the alcohol environment. However, the Texas Comptroller of Public Accounts provides detailed tax information to the public through an Open Data portal, including monthly data on Mixed Beverage Gross Receipts Tax Receipts. These data provide an opportunity to investigate the role that the volume of alcohol sales, beyond simply the presence of an outlet, plays in influencing criminal activity in the proximity of outlet locations. The research focuses on the city of Austin, Texas and integrates spatially and temporally discrete as well as aggregated crime data into spatial models of alcohol availability weighted by alcohol sales volume. A variety of spatial methods will be implemented to evaluate the role that alcohol sales volume plays in influencing criminal activity, including modeling spatial clusters of availability (e.g. bar strips and entertainment districts) and their potential to have additional impacts on crime outcomes.
Understanding our Efforts and Impact in the City of Buffalo—Higher Education Anchor Mission Initiative

Presenters: Alban Morina and Alan M. Delmerico

The Anchor Mission tracks the effort and impact of an institution toward improving the long-term well-being of the community in which it is embedded. The mission measures institutions through four main categories (1) Economic Development; (2) Education; (3) Health, Safety and Environment; and (4) Community Building. Substantial evidence indicates that Buffalo State has been living this Anchor mission well before it formally adopted this mission in its strategic plan. However, the goal of this effort is to better understand the mechanisms through which Buffalo State can contribute further to the improvement and vibrancy of our community. Buffalo State has implemented the Anchor Dashboard as a tool to help guide decision-making across broad areas of institutional practice in the past year. As a result, our college has facilitated a wide range of conversations centered around the four main categories which has brought other Anchors in the Buffalo region to the discussion. Internally, systematic data collection through annual reporting to help better capture the breadth of our institutional effort is a way for Buffalo State to use data to understand our impact and provide continuous quality improvement.

Institutional Effectiveness

Using TaskStream to Monitor Planning: A Tale of Two Strategic Goals

Presenters: Eric Krieg and Tiffany Fuzak

This poster describes how annual reporting in TaskStream is used for monitoring progress toward the Strategic Plan. It summarizes how data are collected, prepared, and analyzed. Using two examples, High Impact Practices for Teaching and Campus Sustainability, it demonstrates how data are used to assess progress toward institutional goals by identifying accomplishments and needs among our activities.

Mathematics

Providing Interactive Remediation and Support via Adobe Captivate

Presenter: Robin S. O’Dell

Funding Source: Fostering Innovation in Teaching with Technology (FITT) Academy

This project developed an out-of-class online support system via Adobe Captivate that allows underprepared students in a mathematics class for pre-service elementary teachers to self-remediate in advance of face-to-face classes, and enable all students-in-need to access additional instructional experiences that support the learning outcomes of face-to-face classes after they occur. Student performance on the content covered within the interactive system will be compared against previous student performance.
Using Digital E-Learning to Support the Development of Mathematical Habits of Mind in Pre-service Mathematics Teachers

Presenter: Nirmala Nutakki

Funding Source: Fostering Innovation in Teaching with Technology (FITT) Academy

According to the Conference Board of the Mathematical Sciences, “all courses and professional development experiences for mathematics teachers should develop the habits of mind of a mathematical thinker and problem-solver such as reasoning and explaining, modeling, seeing structure, and generalizing.” In this presentation, I share my attempt to bring this vision into reality in a problem-solving course for pre-service mathematics teachers. In particular, I will focus on one sample task and illustrate how e-learning software (Adobe Captivate) can be used to facilitate more meaningful student engagement, discourse, and learning in the classroom by providing pre-class and post-class support. The pre-class support involves interactive online tutorials that review or present pre-requisite knowledge, while post-class support involves an online summary and quiz focusing on the important ideas developed in class.

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Physics

Physics for Refugee Children in Germany

Presenters: Daniel MacIsaac and Kathleen Falconer, Mathematics

Funding Source: German Physical Society (Deutsche Physikalische Gesellschaft)

As part of German Welcome Culture efforts supporting international refugees in Cologne, the German Physical Society works with the University of Cologne Institute for Physics Pedagogy to sponsor physics for refugee children at both the Köln Stadt Gymnasium at Thunsneldastraße (a Cologne Jr-Sr High School) and the Red Cross Boltensternstraße refugee transitional housing center. The university and gymnasium supply a wide range of volunteer instructional personnel and assistants who conduct weekly physics classes at both sites. The Physics for Refugees curriculum is attractive, materials-based, hands-on, phenomenological and non-mathematical, with all supplies provided. These include both specifically-designed activities for refugee children to Germany, and activities adapted from efforts for homeless street children in Medellín and Copacabana, Columbia. Activities are intended to engage students who have interrupted formal education, to drive student language development and cooperative skills, and to help children transition to more standard school instruction. This session will report and discuss Spring 2018 Cologne activities, including lessons learned for those wishing to work with similar children.

Growth and characterization of hexagonal HoFeO₃ Thin Films

Presenter: Ram Rai

Funding Source: National Science Foundation (DMR-1406766)

We present the growth and physical properties of hexagonal HoFeO₃ thin films deposited on (111) yttrium-stabilized zirconia and (001) sapphire substrates by Magnetron Sputtering. The substrate temperatures and oxygen partial pressures were optimized to improve the growth condition. We used x-ray diffraction (xrd), atomic force microscope, magnetic measurements, and optical spectroscopy to characterize the samples. The xrd spectra of HoFeO₃ thin films, deposited with the optimized growth conditions, show a single crystalline nature with responses from the c-planes. The in-plane and out-of-plane magnetic moment as a function of temperature show the antiferromagnetic transition at TN ~150 K. Weak M-H hysteresis loops have been observed below 100 K, indicating a weak ferromagnetism. The observed ferromagnetism could be caused by the canted spin structures due to the Dzyaloshinskii-Moria interactions in the system. The optical absorption spectra display Fe d to d on-site and Fe 3d to O 2p charge transfer excitations with
a direct energy band gap of $\sim 1.93 \pm 0.03$ eV at 300 K. Further, temperature dependence of the energy gap exhibits a discontinuity around 150 K, which coincides with the magnetic transition. We compare the physical properties of hex-HoFeO$_3$ thin films with the isostructural hex-LuFeO$_3$ and hex-YbFeO$_3$ thin films.

Expanding the Sierpinski Triangle fractal to the entire plane

*Presenters: Dave Ettestad and Joaquin Carbonara, Mathematics*

The Sierpinski triangle is a fractal which has Hausdorff dimension $\log_3 2 \approx 1.585$ that has been studied extensively. In this presentation we introduce the Sierpinski Triangle Plane (STP), an infinite extension of the Sierpinski Triangle that spans the entire real plane. We define radial fractals, a new kind of unbounded fractal. We then show that STP is a radial fractal with many interesting and surprising properties.

Amotivation Predicts Student Academic Success and Adjustment to College

*Presenters: Jill Norvilitis; Howard Reid; and Karen O’Quin, School of Natural and Social Sciences*

*Funding Source: Provost’s Faculty Fellowship*

Elements in higher education and the broader American society increasingly appear to doubt the value of a liberal arts education. In response, Buffalo State College has expanded its offerings of applied programs. However, society’s movement away from the liberal arts raises a fundamental question: should Buffalo State College continue to emphasize the liberal arts when many incoming students may not value a ‘celebration of the mind,’ and instead appear more concerned about achieving a materially secure future? Buffalo State students from a wide variety of majors were approached in their classes and asked to complete an online survey through Qualtrics. Following consent, students completed a questionnaire consisting of demographic items and the following scales: Appreciation of the Liberal Arts Scale-Revised (ALAS-R; Reid, O’Quin, & Kline, 2010); Academic Motivation Scale (AMS; Vallerand et al., 1992-1993); Student-University Match Questionnaire (SUM; Wintre et al., 2008); Academic Adjustment Scale (Anderson, Guan, & Koc, 2016); and items measuring students’ intent to graduate from Buffalo State, the relative balance that they thought that there is at Buffalo State between critical thinking and applied fields and what they thought that balance should be, etc. Data were analyzed from 523 college students (417 women, 105 men, and 1 ‘other’). There were 138 freshmen, 106 sophomores, 150 juniors, and 127 seniors, of whom 216 self-identified as being ‘white’ and 307 indicated other ethnicities. Students’ results indicated that Buffalo State College should enhance its emphasis upon career opportunities [$t (487) = 13.01, p < .001$]. Students did not think that a greater emphasis on critical thinking was necessary [$t (478) = -.09, p = .93$]. We examined whether student motivation to attend college—intrinsic (a more liberal arts-oriented view) or extrinsic (a more career-oriented view)—was related to their academic adjustment as measured by the SUM, the AAS, and their GPA. Generally, both intrinsic and extrinsic motivations to attend college were positively related with higher grade point averages, perceived match with the college, and self-reported adjustment to college. However, students who were amotivated reported lower GPAs ($r = -.30, p < .001$), lower levels of match with the college ($r = -.10, p = .02$), and lower levels of self-reported adjustment to college ($r = -.41, p < .001$). Thus, students’ adjustment did not differ so long as they had a clear focus upon either the liberal arts or more applied areas. However, those students who did not indicate a focus upon either the liberal arts or more applied programs had a low adjustment to college. A significant subset indicated that they were not motivated to attend college. Since these students reported both low GPAs and low adjustment to college, it is reasonable to conclude that they are at risk of dropping out. In this study, nearly 20% of students could be classified as amotivated, with about 3% highly amotivated. It is possible that amotivated students were less likely to complete the survey and therefore our numbers may be an underestimation of the total percentage of amotivated students.
Physiological Regulation during a Social Stress Task in Young Adolescents who were Prenatally Exposed to Cocaine

Presenter: Pamela Schuetze

Funding Source: National Institute of Drug Abuse

Prenatal exposure to cocaine (PCE) has been increasingly linked to deficits in the development of regulatory processes from infancy into childhood but less is known about regulation during adolescence when neural rewiring may either exacerbate or ameliorate the earlier effects of PCE. The regulatory system is complex and may be reflected in autonomic (ANS) systems. The sympathetic branch (SNS) of the ANS can be measured via pre-ejection period (PEP) while the parasympathetic branch (PNS) is commonly measured by respiratory sinus arrhythmia (RSA; Bernstein et al., 1997; Porges, 1995). For both PEP and RSA, baseline measures and measures of reactivity (change in response to environmental challenge) have been used to assess psychological regulation. The purpose of this study was to examine the association between PCE and PEP/RSA during the Trier Social Stress Task (TSST), a laboratory paradigm designed to elicit social stress in young adolescents (M = 13.87 years, SD = .34; 57% female). Participants consisted of 66 adolescent (34 cocaine-exposed, 32 nonexposed) participating in an ongoing longitudinal study of prenatal cocaine exposure. See Table 1 for sample characteristics. Prenatal substance exposure was ascertained by a combination of self-report, maternal hair, and urine toxicology assessments at delivery. The TSST consisted of a 5-minute baseline (watching a relaxation video), 4-minute anticipation (preparing a speech using a prompt), 5-minute speech and 5-minute serial subtraction task performed in front of judges. RSA and PEP were collected continuously during each epoch and analyzed using IMP and HRV software from Mindware Technologies (Gahann, OH). Adolescents also self-reported their stress levels using a 5-point rating scale after the relaxation video and after the speech and math portions of the TSST. A repeated-measures ANCOVA with prenatal exposure status as the independent variable indicated a significant epoch by group status effect, F(3,61) = 2.896, p = .047, partial eta squared = .08 (see Figure 1) for RSA. Simple effects analyses indicated that RSA was not different between groups for baseline and the anticipation epoch but the exposed group had a significantly larger decrease in RSA during the speech epoch and remained marginally lower than the nonexposed group during the math epoch. Repeated-measures ANCOVAs for PEP and the stress ratings yielded no significant effects. The failure to find group differences in PEP suggests that prenatal cocaine exposure may not be directly related to differences in sympathetic activation during social stress. One possible explanation is that the TSST was not stressful enough to activate the sympathetic nervous system, an interpretation that is supported by the fact that there were no significant increases in reported stress levels over time. Although we did not find any group differences in RSA during baseline or speech preparation, we did find that adolescents who were prenatally exposed to cocaine had increased RSA reactivity (greater suppression) during the TSST speech, indicating greater parasympathetic NS activation. Results highlight the importance of examining individual components of the regulatory system.

Anxiolytic effects of unhealthy food consumption, in adults

Presenter: Naomi McKay

Funding Source: Buffalo State Research Incentive Funds Program

It is well established that elevated stress increases energy intake. Furthermore, when specific food items are examined, people under stress increase consumption of unhealthy food items. Although the effect that stress has on food intake has been extensively examined, why stressed individuals increase energy intake has received little attention. The current studies aimed to determine if eating unhealthy food has a suppressive effect on anxiety. The initial experiment tested whether eating an unhealthy food item decreased perceived anxiety. Participants came into the lab, rated their anxiety, and were told to eat either a Twix®, an equal weight portion of carrots, or read a magazine for five minutes. Then they rated their anxiety a second time. It was found that anxiety decreased more after eating a Twix® than eating carrots, in participants with high baseline anxiety. A limitation to this experiment was that participants were not under stress when
food was consumed. Therefore, a second experiment was run that put participants through an acute laboratory stressor. In this experiment, participants came into the lab, provided baseline anxiety measurements (including perceived anxiety, salivary cortisol, and blood pressure) and underwent a laboratory stressor. After the stressor, participants provided anxiety measures a second time, and then received either a Twix®, carrots, or read a magazine. Anxiety measures were taken four more times every 10 min. Unlike the initial experiment, there was no difference in anxiety, cortisol, or blood pressure between the conditions. It was found, however, that there was a negative correlation between baseline cortisol and dietary restraint. Overall, these studies begin to provide insight into why people eat unhealthy foods during stress.

Relational and Physical Victimization and Alcohol Use in Adolescents: The Role of Negative Friendship Quality

Presenters: Kimberly E. Kamper-DeMarco, Jennifer Fillo, and Whitney C. Brown
Funding Source: T32AA007583 awarded to Ken Leonard; R01AA021169 awarded to Jennifer Livingston (2nd author)

Adolescent bullying and bully-victimization have been associated with substance use (Chiodo et al., 2009; Reijntjes et al., 2011); however, these links are inconsistent, suggesting a need to examine which bullies and victims are most at risk and what mechanisms explain associated substance use. Forming and maintaining friendships is a key developmental task during adolescence. The quality of friendships are purported to buffer the negative effects of victimization, protecting adolescents from poor developmental trajectories, including involvement in risky behaviors (e.g., substance use; Kamper & Ostrov, 2013; Waldrup et al., 2008). The present study investigated the potential buffering effect of friendship quality on alcohol use for children who are bullied and victimized. Data were drawn from a community sample of 801 adolescents recruited via address-based sampling who completed online surveys. The analytic sample included 685 adolescents (56% female, aged 13–15) who self-reported their experience with victimization and perpetration, friendship quality with a close friend, and alcohol use at Time 1 and 6 months later. Moderation analyses were conducted using the PROCESS macro in SPSS 24 to examine how friendship quality moderated the association between relational and physical forms of victimization and alcohol use. Models with perpetration replacing victimization were also conducted. Each model controlled for gender, time 1 alcohol use, the other form of victimization/perpetration, and friendship quality. Results revealed that relational victimization and positive friendship quality significantly predicted alcohol use in all models. The interactions between negative friendship quality and both physical and relational victimization were significant and the association between relational victimization and alcohol use was strongest for adolescents with low reports of negative qualities (i.e., conflict) in their friendship. Relatedly, physical victimization was predictive of less alcohol use when friendships were characterized by high levels of conflict. No significant interaction effects were found for positive friendship quality. These results were not replicated for relational or physical perpetration. It is unclear why highly conflictual friendships are associated with less alcohol use among physically victimized youth. Future research should consider additional factors that may impact the association between friendship quality and alcohol use (e.g., social competence, friends’ substance use, or peer group affiliation).

Do Smaller Samples Have Value?

Presenters: Robert Delprino; Meegan Petrucci, Criminal Justice; and Emily Wetzler

This research had two goals. One goal was to identify the extent of psychological and support services in two law enforcement agencies, and the relationship of those services to measures of job stress, work/family conflict as well as issues related to the use of services. The two agencies differed in size (i.e. number of officers) and jurisdiction. The second goal was to investigate if information gained from smaller samples is viable as a means to investigate matters related to the occupation in question, law enforcement. Much of the published research on law enforcement typically reports data collected from larger agencies. Such an approach typically results in larger sample sizes for statistical analysis. However,
many police departments employ fewer than 25 officers with 87 percent of all police departments in the United States reporting just a few dozen officers in their force. Therefore there is a potential value in collecting data from officers in these smaller agencies. Also, there is a need to identify if information collected from smaller agencies could be generalized to officers serving in other, larger agencies. To make such comparison a quasi-matched group design was used to identify a matched sample from a larger data set. Participants from the two agencies were matched on demographic information resulting in a total matched sample of 22 subjects (11 from each agency). The original data set included responses from 77 officers from the two agencies (62 and 15 respectively). The results indicated that the smaller matched group sample provided similar results in terms of significance to the original larger data set. Given the similarity of the results of the matched group to the original sample, a matched group design may offer a more economical way to collect data and identify relationships between variables for populations where logistical issues can challenge the ability of a researcher to collect information from participants.

**Sociology**

**Suicide Reduction: What Happened in China and Anything Can Be Copied?**

*Presenter: Zhang Jie*

The overall suicide rates in the world are slightly on the rise, and the rates in the United States have rapidly increased by about 30%, from 10.4 per 100,000 population in 2000 to 13.5 in 2016, regardless of prevention efforts with affluent funding. In contrast, the overall suicide rate in China has decreased from 23/100,000 in 2002 to 8.61/100,000 in 2017, marking a 63% drop over past two decades. The most dramatic decrease has been observed in rural young women under 35 years of age, whose suicide rate appears to have dropped by as much as 90%. A comparison of crisis intervention and suicide prevention in the United States and China and of the factors related to suicide may offer an understanding of why this difference in suicide trends has occurred and what lessons can be learned to reduce suicide and the prevalence of mental disorders in the United States. Without U.S. federal funding, as well as private funding, the U.S. suicide rate could have risen much higher than it has. However, compared to the U.S., far less funding has been provided in China for suicide research and prevention and for a much larger population, but the suicide rates are still declining. Is anything going wrong in the U.S.? Are we spending our efforts on the wrong targets? We may not know the answers until we know more clearly what has happened in China in the past 20 years and what China has been doing or not doing. Here we discuss six speculative reasons for the rapid drop of the Chinese suicide rates.

**Speech-Language Pathology**

**Language Sample Analysis in Speech-Language Pathology: A Retrospective Review**

*Presenter: Katrina Fulcher-Rood*

A primary responsibility of speech-language pathologists (SLPs) working in the field of child language is to determine if a child's language performance is typically developing or impaired. In survey and interview studies, SLPs report using a variety of standardized testing and informal measures to assess a child's language skills. SLPs report frequently using the following informal measures to assess children with potential language impairments: parent/teacher questionnaires, observations, checklists, and language sample analysis (LSA). LSA provides an in depth portrait of a child's language abilities, and is frequently recommend as an integral part of assessment protocols. Traditionally, LSA is completed by collecting and recording a sample of a child's language to be later transcribed and analyzed using manual methods or computerized software. While LSA is a recommended practice, little is known about its actual use in clinical practice.
It is important to understand the ways SLPs use LSA clinically so that researchers can understand the language data that is most important to SLPs when making diagnostic decisions. Also, by understanding SLPs LSA process the field can determine recommendations that are most clinically relevant and feasible. While survey and interview studies have reported the use of LSA in clinical practice, actual use may potentially be different due to the inherent response bias associated with these types of data collection techniques (Cochran, 1963; Stephan & McCarthy, 1963). To validate the findings from surveys and interviews, other data collection techniques are needed to see if LSA is used in clinical settings. The current study used a retrospective record review to analyze LSA usage in child language assessment. The current study reviewed 159 diagnostic reports that were written following child language evaluations. Three other trained research assistants extracted data about LSA from each file. A separate research assistant reviewed all extracted data and 100% reliability was achieved. Results for this study are discussed in terms of the percentage of LSA found in the diagnostic reports and the types of analysis methods used. A language sample was collected in 51% (n=81) of the diagnostic reports reviewed. For the diagnostic reports that mentioned the use of language sampling the sample was analyzed using an SLP defined method 48% of the time. Four of the diagnostic reports did not outline the ways in which the sample was analyzed. The most frequently used analysis measure was mean length of utterances which was used in 28% of the diagnostic reports.

Clinical Skill Development for Graduate Clinicians:
Five Essential Elements of Intensive Summer Programming
Presenters: Sara Mann Kahris and Theresa M. Cinotti, Speech-Language Hearing Clinic

This poster will share how the Speech-Language-Hearing Clinic at SUNY Buffalo State implements an intensive summer program to benefit speech-language pathology graduate clinicians. The model includes five elements (administration, evaluation, graduate clinician training, implementation, and supervision) allowing graduate clinicians the opportunity to develop their knowledge base and clinical skills in verbal and written language and auditory processing therapies. The program discussed provides therapy services to school-aged children from the Western New York community. Generalizing this model to other clinical populations will be discussed.

The Use of Badges to Promote Student Learning in the Speech-Language Pathology Graduate Program
Presenter: Kathleen McNerney
Funding Source: Fostering Innovation in Teaching with Technology (FITT) Academy

One of the primary goals of this project was to provide incoming graduate students in the department of Speech-Language Pathology with an innovative way to obtain information. Badges can be used as a visual indication of student achievement. They are typically awarded in Blackboard following the completion of requirements that indicate a student has obtained a certain level of knowledge on a specific topic. The first badge that was designed as part of this project was a research methods badge. This badge was designed to provide students with information regarding resources that are available through Butler Library, how to search and evaluate information, as well as how to use a reference manager. The badge was released at the beginning of August 2018, prior to the start of the semester. The purpose of providing students with this information early was to ensure that they had the knowledge and resources to assist them when researching appropriate therapy techniques for their clients, or when writing their first research paper for a graduate course. A research methods assessment was administered prior to, as well as following the completion of the badge requirements. Students were also asked to complete a survey regarding their opinions of the badge. In general, students reported that they appreciated receiving this information early, and they liked that they were given the opportunity to complete the requirements prior to the start of the semester. The scores on the research methods assessment also improved following completion of the badge requirements.
Research Involving Human Participants: Does my research need to be reviewed by the Institutional Review Board (IRB) or its representative?

*Presenter: Gina Game*

If your research involves human participants, the answer is yes. This includes research in which you use a database of information that someone else collected. As long as you are doing research that involves living humans, your research requires some level of review. Why do I need to do this? Review of all research involving human participants is required by an agreement, called a Federal-Wide Assurance, signed by SUNY Buffalo State and the federal Office of Human Research Protection. This assurance is designed to protect the rights of participants. By protecting the participants, this oversight also protects the researcher and the campus. Failure to follow the federal regulations, including failing to submit a protocol for review, can have serious consequences for both the researcher and the campus. What do I need to do first? Researchers should refer to the Research Compliance section of the Sponsored Programs website at sponsoredprograms.buffalostate.edu, and choose the SUNY RF PACS - IRB. The PACS Portal is a modular system and IRB is the first component to be activated. Researchers and administrators will benefit from this intuitive and easy-to-use system, reduce their effort on protocol creation and submission, reduce IRB turnaround times, and create IRB administrative efficiencies to better serve researchers and their study team members. Researchers and administrators will be able to access the PACS IRB Module to submit their protocols. User-friendly SmartForms will guide you through the submission process. The IRB has done away with paper submissions and only accepting electronic submissions.
Faculty/Staff Research & Creativity Fall Forum

Houston Gym
Poster Presentation from 11:00 a.m.-1:30 p.m.
Welcoming Remarks at 12:30 p.m.

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18th Annual
Thursday, November 2, 2017

Sponsored by
Academic Affairs Office
Research and Creativity Council

Funded by
Research and Sponsored Programs, SUNY Buffalo State

Graphic Design by
Kaylene Waite, Marketing and Communications