Welcome to the Summer edition of the quarterly Research Newsletter. The purpose of the newsletter is to share with the university academic community the accomplishments of our faculty in the publication of books, chapters, journal articles, conference presentations, exhibits, invited lectures, and awards during the previous quarter. We will announce research project awards and contracts and grants from philanthropic foundations that have been funded in the previous quarter. Periodically, we will include feature articles or matters of interest to the research community as well as honors and awards received by faculty.

**Books**

**Gisela Ernst-Slavit** (Education) & Margo Gottlieb

*Academic Language in Diverse Classrooms: Promoting Content and Language Learning. Mathematics, Grades K-2*
This book highlights the role of academic language in today’s math classrooms. The first chapter presents an overview of the language of mathematics and highlights the complexities of and the metalinguistic, metacognitive, and sociocultural factors that influence academic language. The ensuing grade-specific chapters present case studies of K-2 units of instructions that model interactions and learning experiences that help students learn both math content and academic language.

**Gisela Ernst-Slavit** (Education) & Margo Gottlieb

*Academic Language in Diverse Classrooms: Promoting Content and Language Learning. Mathematics, Grades 3-5*
This book highlights the role of academic language in today’s math classrooms. The first chapter presents an overview of the language of mathematics and highlights the complexities of and the metalinguistic, metacognitive, and sociocultural factors that influence academic language. The ensuing grade-specific chapters present case studies of 3-5 units of instructions that model interactions and learning experiences that help students learn both math content and academic language.

**Wendy Olson** (English) & Margot Iris Soven, Dolores Lehr, Siskanna Naynaha

*Linked Courses for General Education and Integrative Learning: A Guide for Faculty and Administrators.*
(Stylus Publishing, LLC, 2012).
Contributors share case studies and assessments of linked courses and linked course programs. In doing so, they discuss how linked courses might improve undergraduate curricula and learning experiences by enhancing pedagogical practices and writing instruction, particularly with respect to general education.
Recent Publications
Journal Articles and Book Chapters

Cory Bolkan (Human Development)
Bonner, L.M., A.B. Lanto, C.R. Bolkan, S. Watson, S., D.G. Campbell, E.F. Chaney, K. Zivin, and L.V. Rubenstein. "Help-seeking from clergy and spiritual counselors among veterans with depression and PTSD in primary care." *Journal of Religion & Health*, January 8, 2013. Little is known about the prevalence or predictors of seeking help for mental health conditions from spiritual counselors/clergy. We screened consecutive VA primary care patients for depression (N = 761) and inquired about their openness to seek help for emotional problems from clergy and their actual contact with clergy. We found that almost half of the participants were likely to seek help for emotional problems from clergy, particularly those with PTSD. Our findings indicate that integration of clergy into care teams may be helpful, particularly for older Veterans with PTSD.

Gisela Ernst-Slavit & David Slavit (Education)
Ernst-Slavit, G., and David Slavit. 2013. "Mathematically Speaking." *Language Magazine*, Vol. 12, No. 7: 32-36. Do you speak math? Not sure what we mean? Well, math can be thought of as a language filled with vocabulary, symbols, and sentence structures. These can make things difficult for students who wish to relate math to their everyday language and experiences. For students learning English as their second language, learning the language of mathematics may seem as though they are simultaneously learning yet another language. Like any language, students have to speak math proficiently in order to use it efficiently.

Kathleen Fountain (Library)
Fountain, Kathleen Carlisle. 2013. "Critical information literacy beyond the university: Lessons from service in a women's health interest group." *Behavioral and Social Sciences Librarian*, 32/1: 24-45. The current theory of critical information literacy instruction calls on librarians to spend more of their time in the classroom focused on understanding the social, political, and cultural construction of knowledge. In this article, the author provides a case study of the information environment in the National Women's Health Network to help librarians facilitate nuanced discussions with students on the applicability of interest group literature inside and outside of the university classroom.

John A. Harrison (School of the Environment)

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Clay Mosher (Sociology)

Clay Mosher (Sociology)
Lanfear, C., S. Akins, and Clay Mosher. 2013. "Examining the Relationship of Substance Use and Sexual Orientation." *Deviant Behavior*, 34/7: 586-597. Using a random sample of 6,713 individuals in Washington State, we find that self-reported homosexual orientation is a significant predictor of past year marijuana use, past year hard drug use, past year binge drinking, and lifetime alcohol addiction. Potential causal mechanisms for these elevated patterns of substance use are discussed.
**Recent Publications continued**

**Journal Articles and Book Chapters**

**Tahira Probst** (Psychology)

We present findings showing a personality trait, consideration of future consequences, predicts a variety of employee safety outcomes. Co-author Sarah Greer was an undergraduate student.

**Tahira Probst** (Psychology)

**Tahira Probst** (Psychology)
Jiang, L., T.M. Probst, and R. Sinclair. 2013. "Perceiving and Responding to Job Insecurity: The Importance of Multilevel Contexts." In A. Antoniou & C. Cooper (Eds.), *The Psychology of the Recession on the Workplace*, 176-195. We explore socioeconomic, occupational, organizational, and individual factors that predict job insecurity and the ways in which employees respond to such insecurity.

**Tahira Probst** (Psychology)
Sinclair, R. R., T.M. Probst, L.B. Hammer, and M.M. Schaffer. 2013. "Low Income Families and Occupational Health: Implications for Work-Family Conflict Research and Practice." In A. Antoniou & C. Cooper (Eds.), *The Psychology of the Recession on the Workplace*, 308-323. In this chapter, we consider how the causes of and reactions to work-family conflict may differ for low income families, given that much of the research on WFC has focused on managerial and professional employees.

**Stephen Solovitz** (Mechanical Engineering)

**Jie Xu** (Mechanical Engineering)
Hashmi, A., G. Heiman, G. Yu, M. Lewis, H.-J. Kwon, and J. Xu. 2013. "Oscillating Bubbles in Teardrop Cavities for Microflow Control." *Microfluidics and Nanofluidics*, 14/3-4: 591-596. Microstreaming generated from oscillating microbubbles has great potential in microfluidic applications for localized flow control. In this study, we explore the use of teardrop-shaped cavities for trapping microbubbles and generating directional microstreaming flow. By altering the acoustic excitation frequency, a flow-switch for altering flow direction is demonstrated. An array of bubble-filled teardrop cavities is engineered into a microfluidic transport system allowing for on-chip particle manipulation in complex flow patterns. This study can be widely employed for microfluidic applications such as drug delivery systems.

**Jie Xu** (Mechanical Engineering)
Recent Publications continued
Journal Articles and Book Chapters

**Jie Xu** (Mechanical Engineering)
Lu, X., D.R. Samuelson, Y. Xu, H. Zhang, S. Wang, B.A. Rasco, J. Xu, and M.E. Konkel 2013. "Detecting and Tracking Nosocomial methicillin-resistant staphylococcus aureus using a microfluidic SERS biosensor." *Analytical Chemistry*, 85/4 2320-2327. We developed a microfluidic chip coupled with surface enhanced Raman scattering (SERS) to rapidly detect and differentiate methicillin-sensitive *S. aureus* (MSSA) and MRSA. A total of 17,400 SERS spectra of the 58 *S. aureus* isolates were collected within 3.5 h. Intra- and interlaboratory spectral reproducibility demonstrated the feasibility of using this optofluidic system for bacterial identification. A global SERS-based dendrogram model was established and cross-validated. This optofluidic platform has advantages over traditional genotyping for ultrafast, automated, and reliable detection and epidemiological surveillance of bacterial infections.

**Wei Xue** (Mechanical Engineering)
Duan, Yan, J.L. Juhala, B.W. Griffith, and W. Xue 2013. “A Comparative Analysis of thin-film Transistors using aligned and random-Network Carbon Nanotubes.” *Journal of Nanoparticle Research*, 15/3: 1478. The purpose of this project is to investigate the characterization of carbon nanotube (CNT) thin-film transistors based on two solution-based fabrication methods: dielectrophoretic deposition of aligned CNTs and self-assembly of random-network CNTs. The electrical characteristics of aligned and random-network CNT transistors are studied comparatively. In particular, the selection effect of metallic and semiconducting CNTs in the dielectrophoresis process is evaluated experimentally by comparing the output characteristics of the two transistors.

**Wei Xue** (Mechanical Engineering)
Duan, Yan, J.L. Juhala, B.W. Griffith, and W. Xue 2013. “Solution-based Fabrication of p-channel and n-channel field-effect transistors using random and aligned Carbon Nanotube Networks.” *Microelectronic Engineering*, 103: 18-21. We report both p-channel and n-channel single-walled carbon nanotube (SWNT) film-effect transistors (FETs) using low-cost materials and easy-to-control procedures. The combination of fabrication and conversion methods reported in this paper can lead to the development of more complicated SWNT-based devices such as complementary logic gates, which require both p- and n-channel transistors.

Recent Presentations
Conference Presentations, Exhibits, Invited Lectures, Awards

**June Canty** (Teaching and Learning) presented a paper at the Annual Meeting of the American Association for Colleges of Teacher Education, February 28 through March 2, 2013 in Orlando, FL. The paper was titled "Best Practices in Teacher Induction" and shared the results of a research project conducted in 2012-2013 that was funded by a College of Education Faculty Funding Award. She also presented a poster based on this study at the WSUV Research Showcase on April 18, 2013.

**Gisela Ernst-Slavit** (Education) presented her paper entitled "Academic Language Demands in the Content Areas: One Mathematics Example” on March 22, 2013 at the annual meeting of TESOL in Dallas, TX. She also participated in a symposium with Debbie Zacarian and Diane Staehr Fenner about "Academic language for academic success of English Language Learners” on March 23, 2013 at the annual meeting of TESOL in March in Dallas, TX. Also, she presented a paper entitled "Common core, different texts and academic language: A focus on ELLs.”

**Tamara Holmlund Nelson** presented a paper, co-authored with **David Slavit** (both Education) entitled: “Teachers’ Collaborative Inquiry into Scientific Models: Making Sense of Standards,” at the National Association for Research in Science Teaching annual meeting in Puerto Rico on April 6-9, 2013.
**Recent Presentations continued**

**Conference Presentations, Exhibits, Invited Lectures, Awards**

**Brett Oppegaard** (Creative Media and Digital Culture) presented on the topic “Analog versus Mobile: Place-based Comparisons of Media Created for Learning about Community History” on January 13, 2013 at the International Conference on Technology, Knowledge, and Society in Vancouver, B.C.

**Brett Oppegaard** (Creative Media and Digital Culture) co-led with the Director of Digital Media at the University of Washington (Harry Hayward), and co-led a session on “Digital Storytelling: How New Technologies and Narrative Can Improve Your Message” on February 14, 2013 at the Council for Advancement and Support of Education (CASE) VIII conference in Portland, OR.

**Brett Oppegaard** (Creative Media and Digital Culture) was chosen as the national George and Helen Hartzog Award recipient, for Outstanding Volunteer Service to the National Park Service, for the efforts he has invested in the Fort Vancouver Mobile research project. He received the award from NPS Director Jon Jarvis at a ceremony on February 21, 2013 at the Mayflower Hotel in Washington, D.C. Oppegaard was chosen from among the many collaborators at the NPS’s 400 sites, numbering, in 2012, 257,000 volunteers donating 6.7 million hours.

**Sue Peabody** (Professor and Associate Chair of History) was awarded by the American Council of Learned Societies a research fellowship to complete her book ‘Slavery and Emancipation in the Indian Ocean World: A Family Biography.” The $65,000 fellowship will allow Peabody to travel to Aix-en-Provence, France to complete her research and prepare the book for publication.

**Tahira Probst** (Psychology) was invited to present on organizational safety climate and supervisor safety leadership at the 2013 Oregon Governor’s Occupational Safety and Health Conference, Portland, OR on March 6, 2013.

**Tahira Probst**, Wendi Benson, Lixin Jiang (Psychology) and Gretchen Petery (former WSU undergraduate) presented a total of 6 papers, posters, and symposia at the annual conference of the Society for Industrial and Organizational Psychology on topics related to employee safety, generational differences in reactions to job insecurity, and trust at work.

**Jie Xu** (Mechanical Engineering) presented his work "A Bjerknes Force Based Microfluidic Platform for On-Chip Trapping, Enriching, Sorting and Manipulating Caenorhabditis elegans" at the SLAS (Society for Laboratory Automation & Screening) conference in Orlando, January 12-16, 2013. This trip was supported by the Tony B. Academic Travel Award.

**Grants**

**John Bishop**, NSF - $349,981

**Stephen Bollens, Gretchen Rollwagen-Bollens**, DOE-BPA - $257,507
TIP276: Enhanced monitoring and investigation of invasive mussels.

**Stephen Bollens**, University of Washington - $9,999
Invasive Zooplankton of Pacific Northwest Estuaries

**M. Jahi Chappell**, Non-disclosed - $35,000
Documentation of the Role of Smallholder/Family Farmer Agriculture in Sustainable Agriculture Production and Maintenance of Biodiversity and Eco

**Allison Coffin**, HHS – NIH - $7,550
pS3 and aminoglycoside-induced hair cell death in the zebrafish lateral line.
Grants continued

Allison Coffin, Elizabeth Whitchurch, Capita Foundation - $4,246
The effects of estrogen on hair cell survival and efficient hearing: A next-generation mRNA—sequencing approach.

Steven Fountain, Humanities WA - $7,498
Recognition: A Conversation.

Dene Grigar, Electronic Literature Organization - $13,392
Pathfinders: Experience of Early Digital Literature.

Hakan Gurocak, Dae-Wook Kim, City of Portland, OR - $75,000
Development of Intelligent Resin Delivery System for Manufacturing Composite Yachts and Wind Turbine Blades.

Hakan Gurocak, University of Washington - $25,000
Southwest Washington MESA Summer Math.

Hakan Gurocak, OR BEST CTR - $550
Bonneville Power Administration Technology Innovation University Consortium Activity A Workshops.


John Harrison, UNESCO - $23,678
Global Foundations for reducing nutrient enrichment and oxygen depletion from land based pollution in support of Global Nutrient Cycle.

Barry Hewlett, Leakey Foundation - $12,120
Demography, Subsistence, and Culture of the Shabu Hunter-Gatherers of SW Ethiopia.

Corinne Kane, WSU Foundation - $9,700
Rapid Assessment of Ka’ohe Bay, Hawaii before MPA implementation.

Dae-Wook Kim, Berat Hakan Gurocak, University of Washington – JCATI - $41,634
Characterization and Mitigation of Drilled Composite Surface Defects in Aircraft Assembly.

Kristin Lesseig, Alexander Dimitrov, ESD #112 - $9,810
STEM-LIT (Improving Student Achievement in STEM via Multi-level Inquiry Teams).

Abolade Majekobaje, OR Campus Compact - $1,000
2013 MLK Collegiate Challenge.

Clayton Mosher, Clark County - $30,000
Assertive Adolescent Family Treatment Program Evaluation.

Tamara Nelson, ESD #112 - $1,635
STEM-LIT (Improving Student Achievement in STEM via Multi-level Inquiry Teams).

Brett Oppegaard, Clark County - $14,319
Fort Vancouver Mobile: The Old Apple Tree Module.

Brett Oppegaard, Clark County Historical Promotion Grant, $14,300, Fort Vancouver Mobile: The Apple Tree Module. This historical promotion grant funded by Clark County Commissioners, provides support for development of an Old Apple Tree module of the Fort Vancouver Mobile project as well as funding for a new visitors center display at the Fort Vancouver National Historic Site, to show visitors to the site about the project, and to help them download and use the app on site.

Susan Peabody, American Council of Learned Societies - $65,000
Slavery and Emancipation in the Indian Ocean World: A Family Biography.

Christine Portfors, NSF - $660,158
RUI: Mechanisms of selectivity to behaviorally relevant sounds in the auditory midbrain.
Grants continued

Cheryl Schultz, Harvard University - $104,732
Endangered Butterflies as a Model System for Detecting and Managing Source-Sink Dynamics in Remnant and Restored Habitat on DoD Lands.

Cheryl Schultz, DOI-BLM - $34,000
RMP Alternatives on Connectivity for Fender’s Blue Butterfly.

Cheryl Schultz, DOI-BLM - $10,000
RMP Alternatives on Connectivity for Fender’s Blue Butterfly.

Nikolay Strigul, Simons Foundation - $35,000
Scaling of Forest Dynamics from individual to Ecosystem Level.

Paul Thiers, Gretchen Rollwagen-Bollens,
University of Maryland - $30,089
SESYNC Synthesis Education Teaching Study Rationale and Scope of Work

Feng Zhao, NSF - $240,076
A New Robust and Energy-efficient Microactuator Device for Demanding Applications.

For information and questions related to this newsletter, please contact Dr. Robert Bates,
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bates@wsu.edu or Holly Davis, Academic Affairs Program & Events Coordinator,
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