

COLLEGE OF EDUCATION AND HUMAN ECOLOGY

# ESEARCH EVIEW

News from the Office Of Research, Innovation and Collaboration I Fall 2019



# **Understanding Preschool Children's Early Learning and Social Development in Mixed-age Classrooms**

Taking a Deep Dive into the Nuances of Early Childhood Classrooms

By Kelly Purtell, Human Sciences

n July 2019, our team (Kelly Purtell, Arya Ansari, Jessica Logan, & Laura Justice) at the College of Education and Human Ecology's Crane Center for Early Childhood Research and Policy was awarded a \$1.4 million grant from the Institute for Educational Sciences to examine the ways in which mixed-age classrooms shape preschool children's early learning and development. This topic is of great research and policy interest because recent estimates from the United States reveal that roughly 65% of preschool classrooms that serve 3- and/or 4-year-olds have over a 12-month difference in age between the oldest and youngest student in the classroom, and 35% report an age difference of 18 months or greater (National Survey of Early Care and Education, 2012). The high prevalence of mixed-age classrooms is potentially concerning as recent studies of nationally representative Head Start classrooms have shown that mixed-age

classrooms are associated with smaller gains in early literacy and math skills for the older children in the classrooms (Ansari, Purtell, & Gershoff, 2016).

Despite their prevalence and potential impacts on children, very little is known about what goes on in mixed-age classrooms and how they may differ from classrooms that focus on children of a single age. The goal of this project is to fill in this gap in knowledge and understand how different aspects of mixed-age classrooms relate to children's academic and social growth across one year of preschool. As part of this effort, we are examining classroom-level factors, such as the rigor of academic content and the use of small groups. We are also focusing on children's individual experiences with classrooms, including their unique interactions with their teacher and peers.

To complete this work, we will partner with preschool providers across Ohio and collect data in 150 classrooms over the next three years. This will include interviews and surveys with teachers and directors, classroom observations, and assessments of children's learning and development. We plan to identify practices that promote positive development for children and eventually develop training modules to help teachers incorporate these practices into their own mixed-age classrooms.

To learn more about this project, contact Kelly Purtell at <a href="mailto:purtell.15@osu.edu">purtell.15@osu.edu</a>.

#### Reference:

Ansari, A., Purtell, K. M., & Gershoff, E. T. (2016). Classroom age composition and the school readiness of three- and four-year old children in the Head Start program. *Psychological Science*, 27, 53-63.



# **Maximizing Research Capacity**

By Natasha Slesnick, Associate Dean for Research

The EHE Office of Research, Innovation and Collaboration (ORIC) has as its primary mission to maximize the research capacity of the College of Education and Human Ecology by providing resources, programs and direct services to advance academic and social impact. Considerable thought is directed towards activities that will optimize success in achieving this mission. Below, two such strategies are described.

This summer, 10 Associate Deans of Research in Colleges of Education and Human Ecology met for the first time in Columbus for a two-day summit. Dean Pope-Davis suggested the meeting as a way to increase the potential for collaboration across institutions, and to infuse new ideas into our shared goal of advancing the research of our perspective institutions.

After all, by building a collaborative network, we benefit by expanding our capacity, and increasing the impact of our work. During the visit, each associate dean of research shared their greatest successes, as well as strategies/initiatives that did not work as expected, and future plans. In order to showcase the unique research conducted across EHE throughout the two days, several faculty and research staff presented the highlights of their work. By the end of the two days, relationships were built, and the ADRs agreed that we should meet annually.

A different Big Ten school will host future meetings on a rotating basis; the next meeting at OSU will occur in the summer of 2033, and next year's summit will be held at the University of Minnesota.



Back row, L-R: Julie Thomas – Nebraska-Lincoln, Frank Symons – Minnesota, Ed Silver – Michigan, Greg Kelly – Penn State, Carolyn Kelley – Wisconsin-Madison, Wayne Wright - Purdue; Bottom Row L-R: Laura Stapleton - Maryland, Gayle Buck - Indiana, Natasha Slesnick - Ohio State, Gabrielle Allen - Illinois, Ann Austin -Michigan State.

Another initiative is the inaugural ORIC Faculty Research Fellows program. One faculty member from each department, Xin Feng (Human Sciences), Scott Graves (Educational Studies), and Leslie Moore (Teaching and Learning) will serve, beginning Fall 2019. These faculty will help advance important research and capacity

building initiatives, and will contribute to EHE's research agenda by identifying topics and trends to enhance and expand ORIC's service capacity to faculty, staff and students. As research ambassadors, these faculty will be present at ORIC events, and will also serve as conduits of information between ORIC and departments.

Other new initiatives will roll-out this year, and if you would like to learn more, or to discuss your research needs, email me at slesnick.5@osu.edu or drop by 153 Arps.



Scott Graves, Leslie Moore, Xin Feng

#### WHAT'S YOUR ORCID?



ORCID provides a persistent digital identifier that distinguishes you from every other researcher and, through integration in key research workflows such as manuscript and grant submission, supports automated linkages between you and your professional activities ensuring that your work is recognized. To learn more about ORCiD, visit orcid.org.

# EHE DATA ACCESS and ANALYSIS CORE (DAAC)

# **A Primer on Effect Sizes**

By Meng-Ting Lo, Graduate Research Assistant and Susie Mauck, Research Development Specialist

When planning a study that will use statistical hypothesis tests to determine the significance of the results, one question researchers ask is, "how many subjects do I need?" There are three pieces of information needed to answer that question: 1) the alpha level, 2) the probability the test will detect an effect if an effect is actually there (statistical power), and 3) the desired size of the effect. Of these three, today we focus on effect sizes.

#### Effect Size

Effect size is a measure of practical significance of the result of a study. It is a way of quantifying the strength of a relationship or the magnitude of an observed effect. For example, when examining the effectiveness of an intervention using treatment and control groups, the p value from a statistical test indicates whether the difference in the scores of the treatment and control groups has statistical significance, while the effect size indicates the magnitude of the observed effect.

An effect size can be expressed in unstandardized (i.e., the original) units and/or in standardized units. A common standardized estimate of effect size for the difference between two groups is Cohen's *d*; the mean difference between two groups divided by a pooled standard deviation (across groups).

Cohen's 
$$d = \frac{\overline{Y}_{\text{treatment}} - \overline{Y}_{\text{control}}}{\sigma_{\text{pooled}}}$$

The appropriate effect size calculation is determined based on the chosen statistical analysis. Some selected effect sizes are presented in the table below.

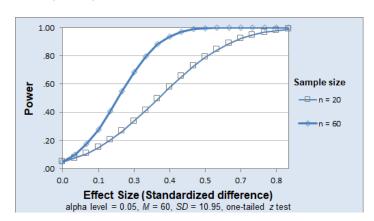
#### Selected Effect Sizes

Effect Size	Analysis
Cohen's d	Independent samples t test
Odds ratio (OR)	Logistic regression
Pearson correlation (r)	Correlation analysis
$R$ squared $(R^2)$	Multiple regression
Omega squared (ω²)	ANOVA

#### **Determining Effect Size**

Researchers who are planning studies must use an estimate of the effect size they expect to see in order to estimate the number of participants needed in the study. In some cases, the researcher has conducted a similar study in the past and can base the estimate of effect size on results from that study. The researcher could also review the literature for evidence of previously reported effect sizes and compute an average effect size. If prior studies cannot be found, researchers can choose a conservative effect size or a range of effect sizes based on the benchmarks proposed by Cohen (1988).

Once the effect size is selected, a power analysis can be conducted to determine the sample size required to achieve the desired level of power. As shown in the figure below, smaller effects require a larger sample size to achieve adequate power, holding all other study components constant. That is, the researcher will need more participants in order to detect a small effect.



#### The Essential Guide to Effect Sizes

For those who want a fuller understanding of this topic, we can recommend an excellent, jargon-free introduction to effect sizes: *The Essential Guide to Effect Sizes: Statistical Power, Meta-analysis, and the Interpretation of Research Results* by Paul D. Ellis (2010). We at the DAAC give this book five stars!

#### Reference:

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.

# Talking in Big Numbers

By Andy Zircher, Institutional Research Manager

'he College of Education and Human Ecology (EHE) is a complex organization, consisting of 3 academic departments and more than 60 programs and specializations. The Data Access and Analysis Core's (DAAC) Institutional Research (IR) function is tasked with providing information about all of the courses, programs, students, faculty, and staff to our EHE leadership to assist them in charting our future.

#### Big Numbers in IR

The information we provide varies widely, from the number of students enrolled in each of our EHE courses, to the total number of credit hours generated by all of those courses. In some cases, highly detailed information is needed. But we are also asked to provide information about our College's "Big Numbers." A Big Number is a top level statistic that describes a critical indicator of EHE performance. Checking the Big Numbers is a bit like taking your temperature – with just one number you can get a sense of how well you are doing.

#### **Program Enrollment**

Program Enrollment is one Big Number that we often report. It can be thought of as a "head count" of the number of students who are enrolled for the term, and whose primary academic program is in EHE. Autumn 2019 Program Enrollment, across all campuses, departments, and programs is visualized below.

**EHE Program Enrollment AU 2019** 5,061 **GRAD / PROF** UGRD 1,018 4.043

Figure 1. Big Number Visualization for Program Enrollment

#### Course Enrollment

Program Enrollment is the number we use when asked, "How many students do we have in EHE?" While knowing our Program Enrollment is essential, it doesn't provide the whole picture. Some EHE students may be enrolled for one course, others for five courses. We also hope to attract students from other Colleges to take EHE courses as electives, to complete General Education requirements, or as part of a minor. That's why we also report on Course Enrollment.

The Course Enrollment Big Number tells us how many students are enrolled in each course offered during the term, added across all classes. So, if a student is taking five classes, they are counted five times in the Course Enrollment Big Number. Course Enrollment is an important Big Number because it drives tuition, teaching loads, and class offerings. The visualization for Course Enrollment in Autumn 2019 is shown below.



Figure 2. Big Number Visualization for Course Enrollment

While the Big Numbers don't provide the details of the EHE campuses, departments, and programs, they do serve an important function. When used in telling our EHE data story, they can grab attention and provide a powerful focus on key elements.

For more information about Institutional Research (IR), contact Andy Zircher at zircher.2@osu.edu.

# **WELCOME NEW FACULTY**

# EHE ADDS THIRTEEN NEW FACULTY MEMBERS

#### **Educational Studies**

#### **Rebecca Crandall** Clinical Assistant Professor

#### **Previous Institution:** The Ohio State University

#### **Research Interests:** Development and well-being of intercollegiate

athletes; LGBTQ+ students; Graduate students in higher education and student affairs programs; Religious minority students



#### **Donna Ford**

**EHE** Distinguished Professor, Special Education

#### **Previous Institution:** Vanderbilt University

#### **Research Interests:** Gifted education

and educational

psychology; Urban education and achievement gaps; Family involvement and achievement orientation; Multicultural curriculum



#### **Edward Fletcher**

Distinguished Associate Professor, Workforce Development and Education

**Previous Institution:** University of South Florida



**Research Interests:** Examining the experiences and outcomes of participation of students in career academies, particularly for underrepresented students

#### **Dustin Miller** Clinical Assistant

Professor

**Previous Institution: Dublin City Schools** 

### **Research Interests:**

Principalship (with an emphasis on high school); Impact of scholarly

practitioners in K12 settings; Purposeful communication in leadership; How professional learning supports educational change



#### **Penny Pasque** Professor and Director of Qualitative Methods, DAAC

**Previous Institution:** North Carolina State University

#### **Research Interests:**

Complexities and

congruencies in qualitative inquiry; Indigenous methodologies; In/equities in higher education; Higher education organizations;

Disconnections between higher education and society



#### **Lori Patton Davis**

Professor, Higher Education and Student Affairs. Department Chair

**Previous Institution:** Indiana University

#### **Research Interests:**

Black education

and intersections of identity, particularly for Black women and girls; Race and racism in higher education; Campus diversity; College student development and success



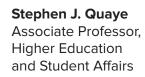
#### Jay Plasman Assistant Professor, Workforce Development and Education

#### **Previous Institution:** Johns Hopkins University

#### **Research Interests:**

College and career

readiness; Career and technical education; Education planning; High school completion; 21st Century (social-emotional) skills and dispositions; Large-scale datasets; Quasi-experimental design



**Previous Institution:** Miami University

**Research Interests:** Engaging in and facilitating difficult

dialogues about privilege, power, and oppression; Student activism; Navigating racial battle fatique



#### Human Sciences

Kwame J. Agyemang Associate Professor, Sport Management

**Previous Institution:** Louisiana State University

**Research Interests:** Organizations and

responsibility; Institutional theory



race; Social

#### Sara Lang

Assistant Professor. Human Development and Family Science; Director, Virtual Lab School

#### Previous Institution:

The Ohio State University



#### **Research Interests:**

Examining children, families' and teachers' experiences in childcare and factors that influence child care quality; Ensuring the early childhood workforce is well trained and supported

#### Arya Ansari

Assistant Professor. **Human Development** and Family Science

**Previous Institution:** University of Virginia

**Research Interests:** 

Educational disparities; Early

childhood education; Poverty; Parenting; Family-school partnerships; School readiness



#### Chris Zhu

Assistant Professor, **Human Nutrition** 

**Previous Institution:** Miami University

**Research Interests:** 

Using mass spectrometry-based metabolomics in

combination with advanced chemometrics for the sensitive reliable and non-invasive detection and monitoring of human diseases

### Teaching and Learning

#### **Danene Fast**

Clinical Assistant Professor, Language, Education and Society

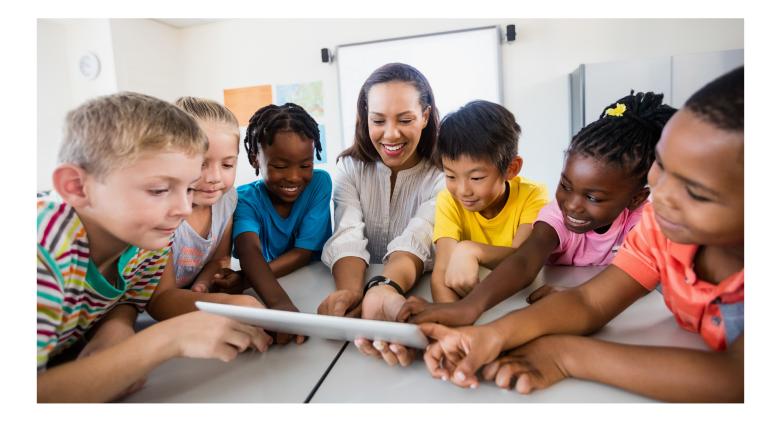
#### **Previous Institution:**

The Ohio State University

#### **Research Interests:**

Accessibility, inclusion, and accommodations that meet the unique needs of individuals with visual impairments in all settings





# **Early Childhood Leads the Way in Research in Schools Activity**

By Nicole Luthy, Director of Strategic Research Initiatives, ORIC

\*HE researchers reported 4800 hours of research in schools for the 2018-19 academic year. A closer look at the numbers shows that early childhood research is leading the way in this arena. Situated in PreK-12 schools and early childhood centers across Ohio, over 3,200 research hours were reported, accounting for nearly 70% of all research activity conducted in schools. Led by faculty across all EHE departments and from the Crane Center for Early Childhood and Policy, these studies focused on a variety of topics within early childhood education, including teacher's professional development and learning, early literacy and language development, kindergarten transition, social emotional learning, and classroom instruction.

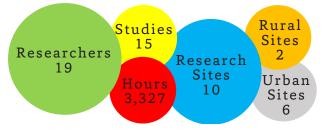
The importance of early childhood education has been well documented. Children's early experiences impact every aspect of their development, as well as their future success and well-being. The work of EHE researchers supports Ohio's early educators in providing quality and evidence-based programming for young children. In addition, their work:

- informs state and national policy making
- focuses attention on children in high needs schools and economically-disadvantaged communities

- contributes to the body of knowledge on early childhood education
- elevates the profile of EHE in early childhood education
- advances EHE's priorities in early childhood

Collectively, this research expands and deepens our understanding of children's early childhood experiences, and more importantly, improves our ability to provide quality care and education.

#### **EHE Early Childhood Research: By the Numbers**



Working with school and community partners to define new strategies in early childhood is an EHE community pillar. For more information on research in schools, contact Nicole Luthy at luthy.22@osu.edu.

# New Research Awards

HE researchers were involved in 19 new awards funded between January 1, 2019 and June 30, 2019. The anticipated total award amount for the 15 awards where EHE researchers are the principal investigator is \$4,546,664.

Brgoch, Shea; Lower, Leeann. Human Sciences. To specialize or not to specialize: Perspectives from parents and coaches. North American Society for Sport Management (NASSM). \$600.

Bruno, Richard; Jimenez-Flores, Rafael. Human Sciences. Alleviation Of Metabolic Endotoxemia In Adults With Metabolic Syndrome With Milk Fat Globule Membrane. National Dairy Council. \$539,236.

Bruno, Richard; Brock, Guy; Vodovotz, Yael; Yu, Zhongtang. Human Sciences. Antiinflammatory Bioactivities of Green Tea Catechins Along the Gut-Liver Axis in Obese Models of Metabolic Endotoxemia. USDA/NIFA. \$500.000.

Jackson, Rebecca; Slesnick, Natasha; Betz, Michael and others. Human Sciences. Optimizing HEALing in Ohio Communities (OHIO). NIH/NIDA. \$122,153,263.

Justice, Laura. CCEC. Child Adult Care Food Program (CACFP) renewal 2018-2019. Ohio Department of Education (USDA). \$8,104.

Koury, Abel. CCEC. Ready for Kindergarten Class Professional Review. Columbus Metropolitan Library. \$5,000.

Kowalcyk, Barbara; Scharff, Robert; Gebreyes, Wondwossen; Oppenhein, Emia; Weir, Mark; Yousef, Ahmed. Human Sciences. The Assessment and Management of Risk from non-typhoidal Salmonella and Diarrheagenic Escherichia coli in Raw Dairy and Beef in Ethiopia (TARTARE). Gates Foundation and DFID. \$3,391,063.

Levering, Marsha. Teaching and Learning. LLI/Art of Coaching Professional Development. Charles County Public Schools. \$290,522.

Piasta, Shayne; Logan, Jessica; Purtell, Kelly. Teaching and Learning. Language Gains during Early Childhood: Prediction of Later Outcomes and Multiple-Methods Exploration of Relevant Classroom Factors. IES. \$1,399,996.

Purtell, Kelly; Ansari, Arya; Logan, Jessica; Justice, Laura. Human Sciences. IES. Classroom Age Composition and Children's Early Learning: Understanding the Role of Classroom Practices. IES. \$1.399.989.

Purtell, Kelly; Justice, Laura; Koury, Abel; Logan, Jessica. Human Sciences. Cincinnati Preschool Promise Evaluation (Year 2). United Way of Greater Cincinnati. \$248,628.

Rajashekara, Gireesh; Ilic, Sanja. Human Sciences. Data acquisition, knowledge synthesis, and information transfer on mitigation of antimicrobial resistance the food production environment of low and middle income countries of SE Asia and S ub-Saharan Africa. Food and Agriculture Organization of UN. \$99,141.

Sastry, Sudhir; Kaletunc, Gonul; Kopec, Rachel; Yousef, Ahmed. Human Sciences. Combination Mechanical Shear And Moderate Electric Field Treatment For Production Of Safe, Nutritionally Enhanced Liquid Foods And Beverages. USDA/NIFA \$928,662.

Strege, Gayle. Human Sciences. Bonnie Cashin American Sportswear Collection Rehousing Project. National Endowment for the Humanities. \$5,019.

Thompson, Winston. Educational Studies. APedagogies of Punishment. The Center for Ethics and Education-University of Illinois. \$20,822.

Wellman, Meredith; Boone, Barbara. CETE. Salvation Army of Central Ohio Human Trafficking Evaluation. The Salvation Army. \$57,000.

Wild, Tiffany. Teaching and Learning. SALUS University - support for one student - National Leadership Consortium in Sensory Disabilities. Salus University. \$16,779.

Xie, Kui; Vongkulluksn, Wanchanit; Wolters, Christopher. Educational Studies. Examining interactions between contextual features and study engagement of at-risk college students. Spencer Foundation. \$49,969.

Xie, Kui. Educational Studies. MuMoExplore: Exploring Critical Pedagogy of Place and Multimodal Digital Technology to Engage Young Children's Science and Literacy Learning. University of Buffalo \$5,000.

\* When the PI is not from EHE, the EHE Co-I is scarlet and bolded and the Co-l's department is listed.

### **EHE Connect and** Collaborate Awardees

Connect and Collaborate incentivizes Ohio State-community teams to develop and grow meaningful partnerships that catalyze engaged teaching, research and service programs with measurable and sustainable benefits to the community while advancing the strategic and scholarly goals of the university. To read more about this yearly program, go to oaa.osu.edu/ ccgrants.

Laura Justice. **CCEC Summer Sucess** Kindergarten Readiness Camp 2019



Caezilia Loibl. **Human Sciences** Improving the Quality of Life of Chronically III Individuals Through Financial Coaching



## **National Science Foundation Graduate Research Fellowship**

These fellowships recognize and support outstanding graduate students in NSFsupported science, technology, engineering and mathematics (STEM) or STEM education disciplines who are pursuing research-based master's and doctoral degrees at accredited United States institutions. For more information go to go.osu.edu/nsfgraduatefellowship.

Fellow: Patricia Pittman, Human Sciences

Advisor: Claire Kamp Dush (HDFS)



#### Asa G. Hilliard Award

James L. Moore. Educational Studies. has been recognized by the **Dream Deferred** College Board as the Asa G. Hilliard award Winner. The Asa G. Hilliard award



acknowledges individuals or organizations that have encouraged African American students to strive for academic success. These individuals and organizations will have developed successful methodologies that have positively impacted countless African American students. For more information go to go.osu.edu/asaghilliardaward.

#### **Dean's Discovery Grant**

Jeff Volek. Human Sciences, was awarded a \$50,000 College of Medicine Dean's Discovery Grant through the Cross-Campus-Collaborative Pilot Program for his project



Benefits of a Ketogenic Diet in Patients with Heart Failure with Preserved Ejection Fraction.

## **Wexner Medical Center Healthy Community Award**

Rick Petosa, Human Sciences. recieved the Wexner Medical Center Healthy Community award for his community driven program Mentoring to Be



Active: Promoting

Adolescent Health in Appalachia. For more

information go to

go.osu.edu/healthycommunityaward.

Partner: College of Medicine

# University Fellowship Awardees

Welcome to our new graduate students who have recieved University Graduate Fellowships

#### **Educational Studies**

Tim Barczak, University of Tennessee Adrian Bitton, University of Maryland Marvin Evans, University of The West Indies Abigail Mills, The Ohio State University Kara Shawbitz, Northern Michigan University Jiseung Yoo, EWHA Woman's University



#### **Human Sciences**

Monica Pasillas, University of Arizona Caroline Bartholomew, University of Michigan Jared Martin, Humboldt University

#### **Teaching and Learning**

Ebony Beckham, The Ohio State University Doricka Menefee, University of Pennsylvania Racquel Armstrong, University of Pennsylvania Joselyn Parker, Youngstown State University



# **Travel Awards**

The following individuals received EHE Office of Research, Innovation and Collaboration (ORIC) travel awards from January 1, 2019 through June 30, 2019.

#### **Graduate Student Travel**

#### **Educational Studies**

Robin Sayers Margaret Bowman Taufik Mulyadin Michael Nelson Iksang Yoon
Jacqueline Von Spiegel
Kerra Carson
Corinne Gist
Alyssa Chrisman
Caroline Dahlsrom
Leydi Johana C. Moreno
Sahra Ahmed
Yeoeun Kim
Elizabeth Kraatz
Christopher Yaluma
Anna Brady
Caitlyn Chambers

#### **APPLY ONLINE**

All EHE Office of Research, Innovation and Collaboration (ORIC) travel grant applications are accepted at any time during the year but must be submitted PRIOR to travel.

go.osu.edu/EHEGradTravel go.osu.edu/EHEPostDocTravel go.osu.edu/EHEFacultyTravel Yu Ling Chen
Emily Bumpus
Xiaoning Sun
Tanchen Li
Stephanie Charles
Jessica Rivera
Saesbyul Kim
Kelsey Higginson
Amy Sharn
Nathan Helsabeck

#### **Human Sciences**

Meingold Chan Karis Inboden Michael Shepard Yitang Lan Madeline Stern Leah May Richard Bailey **Emily Phillips** C. Rosie Bauder Kouil Cho Daekyun Oh Yilin Li Carter Rockhill Daniel Wray Evan Davis Meghna Mahambrey Alyssa Dispennette Marchy Haynam Victoria DeScenza Kate Ormiston Lydia Caldwell Deena Snoke Xianhua Zai Rachel Cole Barbara Sanchez Wei Ju Margaret Moodispaw

# Teaching and Learning

Jaime Kautz Jacqueline Ridley Zhenjie Weng Tamara Roose Karoline Smucker Andrew Trevarrow Somin Kim Joshua Williams Deborah Morbitt Jenel Igeleke Penn Julie Maynard Lindsay Burns Mary Beth Zavodnik Janice Jung Joanne Vakil Rebecca Tang **Gregory Williams** Robert Gammon

Cahty Mehl Leiah Groom Emilie Curtis

#### Postdoctoral Researcher Travel

Anna Rhoad-Drogalis Jing Chen Ruri Famelia Youmna Diri-Rieder

#### Faculty International Travel

Suzanne Bartle-Haring Ann O'Connell Brett Zyromski Colette Dollarhide Karen Beard Jan Nespor

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