



Ohio Project Kaleidoscope 5th Annual Conference

*Increasing STEM Student Success in Higher
Education*

Program with Abstracts

<https://www.aacu.org/pkal/ohio/2019/spring-conference>

For addition information contact

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University of Dayton

Dayton, OH

Saturday, May 18, 2019



Association
of American
Colleges and
Universities

Conference Theme:

INCREASING STEM STUDENT SUCCESS IN HIGHER EDUCATION

Subtheme I: *Using Simulations to Enhance Student Learning in STEM*

Subtheme II: *Promoting Critical Thinking Skills through Laboratory and/or Mathematical Modeling Activities*

Subtheme III: *Using Technology Tools to Broaden Access to STEM Education*

Subtheme IV: Supporting STEM Students and/or Faculty from Diverse Backgrounds

Subtheme V: *Transformative Teaching Practices in Undergraduate STEM Education: First Year through Upper Level Courses*

PLENARY SPEAKERS



Dr. Kathy Perkins, Depts. Of Physics, University of Colorado; Director of PhET Simulations.

PHET INTERACTIVE SIMULATIONS: ENGAGING STUDENTS AND SUPPORTING LEARNING



Dr. Carl Weiman, Depts. Of Physics and Education, Stanford University; 2001 Nobel Laureate, Physics

**TAKING A SCIENTIFIC APPROACH TO SCIENCE EDUCATION
(AND MOST OTHER SUBJECTS)**

Conference Schedule

<u>Start</u>	<u>End</u>	<u>Session</u>	<u>Location</u>
7:30	12:30	Registration/Check-In	Southside Entrance
7:30	8:30	Continental Breakfast	Cafeteria
8:30	8:45	Opening Welcome <i>Dr. Eric Spina, President, U. Dayton</i>	Cafeteria
8:45	9:45	Morning Plenary Session: <i>Dr. Kathy Perkins, U. Colorado Dept. of Physics and Director of PhET Interactive Simulations</i>	Cafeteria Abstract on p. 8
9:45	10:00	Snack Break	Cafeteria
10:00	11:00	Morning Concurrent Sessions	See Table on Page 2 and Abstracts on pp. 10-13
11:00	11:45	Poster Session	Room S1050; See Abstracts on pp. 14-20
11:45	12:30	Lunch	Cafeteria
12:30	12:45	Break	
12:45	1:45	Afternoon Plenary Session: <i>Dr. Carl Wieman, Stanford University Graduate School of Education and 2001 Nobel Laureate, Physics</i>	Cafeteria Abstract on p. 21
1:50	2:50	Afternoon Concurrent Sessions	See Table on Page 2 and Abstracts on pp. 22-25
2:50	3:00	Snack Break	Cafeteria
3:00	4:15	Workshops	See Table on Page 4 and Abstracts on pp. 26-27 for details.
4:15	4:30	Conference Reflections <i>Dr. Kathy Perkins, U. Colorado Dept. of Physics and Director of PhET Interactive Simulations</i>	Cafeteria
4:30	4:45	Awards and Conference Closing	Cafeteria

ORAL PRESENTATIONS

	Start	Marshall Room	Room S2060	Room S2006	Meyer Room
AM Session	10:00	Learning Physics through Scenario-Based e-Learning (Dunham, Moore, Gao)	Making Mathematics Accessible to Non-Math Majors - A Lesson from Social Science Statistics (Quinones)	A Conversation About Math Placement (Fischer, Currie)	Exploring student thinking about genetics information flow in large enrollment undergraduate classes (Uhl)
	10:20	Development and Use of a Virtual Reality Molecular Modelling System in Organic Chemistry Courses (Nichols)	Bridging the gap with mobile students using social media groups (Boutaam)	Quantitative Methods in Environmental Science and Ecology Courses via Native Plant Monitoring in Local Parks (Kaczinski, Roehrs, Haar)	Specification Grading in Organic Chemistry (Houseknecht)
	10:40	Looking inside the Black Box: Building Physics Simulations with the STEMcoding project (Orban)	Impact of pre-lab videos on improving students' learning outcomes (KrishnankuttyRema, Shilov)	Designing a Mastery Grading System (Weir)	Applying Scientific Knowledge (ASK): A Transformative Approach to Integrating Undergraduate Research (Deibel, Traxler, Rodgers)
		<i>I. Using Simulations to Enhance Student Learning</i>	<i>II. Promoting Critical Thinking..., and III. Using Technology Tools...</i>	<i>IV. Supporting STEM Students...</i>	<i>IV. Transformative Teaching Practices...</i>
PM session	1:50	Student Perspectives on the Inclusion of PhET Sims in General Chemistry Labs (Clark, Blaser)	Fending Off Failure for Students: Our Flipping Findings (Stringfield, Darling, Wood)	Flipped Classroom Design in Organic Chemistry Course Improves Student Performance and Retention (Poturovic, Guinn, Hansen)	Students' Perspectives on Undergraduate STEM Teaching: Perceived Affordances for Learning and Engagement (Collins)
	2:10	Transforming the First-Year Engineering Curriculum Using Hands-On Design Challenges (Rhoads, Buchner)	Exposing Students to Practical Engineering Design Problems (Bohna)	Defining Success in the First Year of a Tenure-Track, STEM Faculty Position (Crowe, Brown)	Peer Review of Writing Within a First-Year Engineering Design Project (Harper)
	2:30	Combining Guided Inquiry and Simulations to Enhance Student Learning and Engagement (Hoffman)	Multimodal, Interactive Online Content: Engaging All Students (Bazett)	Multicultural Education in Engineering: Successes and Challenges (Arif)	What the Best Chemistry Students Do: Using Peer Influencers to Emphasize Metacognitive Learning Strategies (Stoltzfus)
		<i>I. Using Simulations to Enhance Student Learning</i>	<i>II. Promoting Critical Thinking..., and III. Using Technology Tools...</i>	<i>IV. Supporting STEM Students...</i>	<i>IV. Transformative Teaching Practices...</i>

POSTERS (11:00-11:45; Room S1050); ****Ohio PKAL STEM Teaching Partnership Grant Awardees****††Ohio PKAL STEM Teaching Collaboration Project Grant Awardees**

I. Using Simulations...	Teaching Complex Programming Concepts with Low Tech Demonstrations (Holloway)	1
	The Search for Exoplanets: A Capstone Project in Service Learning and Outreach (Archer)	2
	A Controlled Study of Stereoscopic Virtual Reality in Freshman Electrodynamics (Smith, Porter, Orban)	3
II. Promoting Critical Thinking...	Engineering Project Platform for Electrical and Computer Engineering Curriculum Integration (Sundaram)	4
	Assessing Critical Thinking and Conceptual Understanding of Energy in Modeling Chemistry Classes (Orosz, Clark, Anderson)	5
	Teaching Undergraduate Students Metabolomic Techniques Using Hands-on Analysis of Clinical Trial Data (Montel, Kopec, Chatelaine, Cooperstone)**	6
III. Using Technology Tools...	Using Gamification to Scaffold Online Content in a Clinical Research Quality Course: The Quality Kaizen (Jones, Jester)	7
	Investigation of Student Writing on Exams: Implications for Learning and Testing (Mayeres, Sherer, Clark)	8
	Iterative changes promote conceptual change in biochemistry (Austin)	9
	Expanding Bioscience Curriculum in North Central Ohio (Tickhill)	10
IV. Supporting STEM Students...	Development of the Persistence of Engineers in the Academy Survey (PEAS) (Aldridge)	11
	Intrusive Advising for STEM Student Success (DiCarlo, Jarmen, Carter, Fenwick)	12
	Expanding Interest in Information Security (Smith)	13
V. Transformative Teaching Practices in Undergraduate STEM Education...	The Effect of PLTL and Inquiry-Based Labs on Student Performance in General Chemistry (Turner, Clark)	14
	Exam Wrappers May Help Students Change Their Study Habits in an Introductory Biology Course (Heym, Bayus, Cheesman)	15
	Using ePortfolios in STEM First Year Experience Courses to Increase Engagement, Success, and Persistence (Greer, DeMatteo, Benander)	16
	Evidence-Based Model for Institutional Change in STEM (Roberts, Propsom)	17
	Using a Unique Recitation Model to Improve Student Success in an Introductory Biology Course (Brown, do Amaral, Rosendale)	18
	Calculus I: An Integrated Approach to Integrals (Smith)	19
	The Synergy of a General Chemistry Faculty Cohort (Trick, Masthay, Crosson, Biffinger)	20
	Integrating Biomimicry and Entrepreneurship Principles into Data Acquisition Course (Cheng, Khakipoor, Samudrala)††	21

2019 OH -PKAL Conference Program Overview

WORKSHOPS (3:00-4:15 PM)	Room
Theme I: Using Instructor-Led PhET sims to Transform Your STEM Course: Examples from General Chemistry (Clark)	Marshall
Theme II: Modifying Lab Instruction to Promote Critical Thinking (Koenig, Wood, Bao)	S2060
Theme III: Addressing eAccessibility of Online Course Content Using UDL Principles (Chekour)	S2080
Theme IV: Uncorking Curricular Bottlenecks to Diversity and Inclusion in STEM (Klingbeil)	S2006
Theme V: Introduction to POGIL and its Facilitation in the Classroom (Murray, Anderson, Federico, Larson, Beard, Feng)	Meyer