

## LAWRENCE TODD ESCALADA

**ADDRESSES**

University of Northern Iowa Department of Physics 317 Begeman Hall Cedar Falls, IA 50614-0150 Phone: (319) 273-2431 Fax: (319) 273-7136 Email: <a href="mailto:Lawrence.Escalada@uni.edu">Lawrence.Escalada@uni.edu</a> WWW: <a href="https://chas.uni.edu/physics/directory/lawrence-escalada">https://chas.uni.edu/physics/directory/lawrence-escalada</a>	University of Northern Iowa Science Education 153 McCollum Science Hall Cedar Falls, IA 50614-0296 Phone: (319) 273-7357 Fax: (319) 273-3051
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------

### EDUCATION

1997 Doctor of Philosophy in Curriculum and Instruction – Physics and Science Education  
Kansas State University, Manhattan, KS  
1995 Master of Science in Physics, Kansas State University  
1989 Bachelor of Science (Major: Physics), Kansas State University  
1988 Bachelor of Science (Major: Education – Physics Teaching), Kansas State University  
1985 Associates Degree, Garden City Community College, Garden City, KS

### PROFESSIONAL POSITIONS

2013-present Director of Science Education, College of Humanities, Arts and Sciences  
University of Northern Iowa, Cedar Falls, IA  
2010-present Professor of Physics and Science Education, Department of Physics,  
University of Northern Iowa, Cedar Falls, IA  
2003-2010 Associate Professor of Physics and Science Education, Department of Physics,  
University of Northern Iowa, Cedar Falls, IA  
1997-2003 Assistant Professor of Physics and Science Education, Department of Physics,  
University of Northern Iowa, Cedar Falls, IA  
1994-1997 Advanced Placement Physics Exam Faculty Consultant, College Board Inc.  
1995-1997 Physics Graduate Research Assistant, Kansas State University, Manhattan, KS  
1993-1994 Physics Graduate Teaching Assistant, Kansas State University, Manhattan, KS  
1993 *Physics InfoMall CD-ROM* High School Consultant, Kansas State University, Manhattan, KS  
1993 Adjunct Physics Instructor, Kansas State University, Manhattan, KS  
1989-1993 High School Physics and Physical Science Teacher, Topeka High School and Highland  
Park High School, USD #501, Topeka Public Schools, Topeka, KS  
1992 U.S. Department of Energy Teacher Research Associate. Colorado School of Mines and EG&G  
Rocky Flats, Golden, CO. Research: Plutonium metallurgy area. Reusable Mold Development  
project.  
1988 *Physics of Sports Videodisc* Student Consultant, Kansas State University, Manhattan, KS  
1985-1989 K-12 Substitute Teacher, USD #457, Garden City Public Schools, Garden City, KS

### ENDORSEMENT

1989-1993 Kansas Grades 7 – 12 Teaching License with primary endorsement in physics and additional  
endorsements in chemistry, physical science, and general science

### AWARDS AND HONORS

2021-22 Nominated for MWOne UNIque Academic Advisor Award  
2011-12 University of Northern Iowa Regents Award for Faculty Excellence  
2011-12 Nominated for the UNI College of Humanities, Arts and Sciences Dean's Award for Teaching Excellence in  
Department Programs – Science Education  
2011-12 University of Northern Iowa Graduate College Milestone Award for Advising Graduate Students  
2010-11 University of Northern Iowa Ross A. Nielson Professional Service Award.  
2009-10 Nominated for the University of Northern Iowa Veridian Credit Union Community Engagement Award  
2008-12 Nominated for the University of Northern Iowa Regents Awards for Faculty Excellence

- 1998 *Computers in Physics* Eighth Annual Educational Software Contest Winner with N. S. Rebello, C. Cumarantunge, & D. A. Zollman for *Energy Band Creator Computer Program*.
- 1997 *Computers in Physics* Seventh Annual Educational Software Contest Winner with N. S. Rebello, D. A. Zollman, & C. Cumarantunge for *Spectroscopy Software Package*.
- 1996 National Association for Research in Science Teaching Outstanding Master's Thesis of the Year.
- 1993 Follow-On Activity Award, U.S. Department of Energy Teacher Research Associates Program
- 1992 U.S. Department of Energy Teacher Research Associate

## PROFESSIONAL ORGANIZATIONS

American Association of Physics Teachers  
Physics Education Research Topical Group  
Association for Science Teacher Education  
Iowa Section of the American Association of Physics Teachers  
Iowa Science Teachers Section of the Iowa Academy of Science  
National Association of Research in Science Teaching  
National Science Teachers Association  
North Central – Association for Science Teacher Education  
Physics Teacher Education Coalition

## TEACHING

### *University Courses Taught (University of Northern Iowa, 1997 – present)*

A variety of courses including undergraduate introductory physics, physical science for elementary majors, and secondary science teaching methods courses. Graduate courses with a focus in both physics content and pedagogy specifically designed for both in-service and pre-service PreK-12 grade science teachers have also been taught including for those seeking Iowa Grades 5-12 Physics and All Science Teaching Endorsement. Undergraduate and graduate research in physics and science education have been supervised.

Regents Alternative Pathway to Iowa Licensure Pre-intern Spring 2<sup>nd</sup> Course Instructor with Alison Beharka, 2011-2016

## PROFESSIONAL SERVICE

### *UNI Physics Department*

Recruitment Committee, 2010-2016  
Academic Assessment Committee, 2006-2007, 2011- 2014  
Academic Review Committee, 2003-2008  
Professional Assessment Committee, 2003-present (member); 2006-07, 2011-12, 2015-16 (chair)  
Outreach Committee, 1999-present  
CNS Senate Alternate, 1999-2007  
Scholarships, Fellowships, and Awards Committee, 1999-present, Chair, 2012-2018  
Curriculum Committee, 1999-present  
Physics Education Advisor, 2003-present  
Search Committee for Physics/Science Education Position, 1999-2001, 2005-2006 (chair)  
Liaison to the Physics Teacher Education Coalition (PTEC) sponsored by the American Physical Society, American Institute of Physics, and American Association of Physics Teachers, 2007-present

### *College and University*

Steering Committee for UNI Teacher Education Curricular Transformation and Content Focused Working Group  
Member, 2022-Present  
Search Committee for UNI College of Education Dean Position, 2021- 2022  
Steering Committee for the MSH/BRC Space Utilization Study, 2021-Present  
Search Committee for UNI Biology and Science Education Position, 2021  
UNI and AASCU Recalibrating the Federal Role in Educator Preparation Workgroup, 2019-present  
UNI Jacobson Endowed Chair and Center for Educational Transformation Search Committee Co-Chair, 2017-2018

UNI Teacher Education Strategic Initiatives (TESI) Steering Committee and the TESI Field Experience Focus Group, 2015-present  
UNI Science Education Chair or Director, 2013-present  
UNI Science Education Faculty Member, 1997-present  
UNI Science Education Graduate Faculty Member, 1997-present  
UNI Science Education Graduate Application & Scholarship Committee Member, 1997-present  
UNI Science Education Undergraduate Scholarship Committee Member, 2002-present  
UNI Science Education Undergraduate (Lead) Advisor, 2013-present  
UNI Science Education Graduate Advisor, 1997-present  
UNI Science Education New Student and Transfer Student Orientation and Registration Advisor, 2002, 2005, 2006, 2013-present  
UNI Student Teaching Advisor for Physics and Science Education, 2013-present  
UNI Science Education Resource Center (SERC) Supervisor, 2013-14  
UNI Science Education Undergraduate Student Outcomes Assessment Committee Member, 2008-present  
UNI Science Education Curriculum Committee, 1999-present  
UNI Science Education CHAS Senate Alternate, 2014-present  
UNI Science Education Computer Use Committee Chair, 1997-2013  
UNI Science Education representative to CNS Computer Use Advisory Committee, 2002-11  
UNI Center for Educational Transformation (CET) Advisory Council, 2013-2018  
UNI College of Humanities, Arts & Sciences Student Computer Fees Committee, 2011-13  
UNI College of Humanities, Arts & Sciences Advisory Committee on Promotion and Tenure, 2011-13  
UNI Teacher Education Faculty Member, 1998-present  
UNI Teacher Education Convocation Committee, 2006-present  
UNI Richard O. Jacobson Endowed Chair in Elementary Science Education Search Committee, 2013-14  
UNI Secondary Teacher Education Senate – Science Education Representative, 2011-13  
UNI College of Education Dean Search Committee Member, 2009-10  
UNI Council on Teacher Education Team Teaching, Supervision, and Outreach Ad Hoc Committee, Fall 2009-11  
UNI National Institute for Early Math & Science Education Planning Advisory Committee Member, 2009-present  
UNI Council on Teacher Education, CNS Secondary Education Representative, 2007-11  
UNI Teacher Education Methods Assessment Rubric Committee, 2004-11  
UNI Technology Outcomes for Pre-service Teachers Committee, 1998-11  
UNI Graduate Faculty Member, 1998-present  
UNI STEM Community Member, Fall 2009-present  
UNI Ross A. Nielsen Service Award and Class of 1943 Teaching Award Selection Committee, 2013  
UNI Earth Science & Science Education Search Committee, 2006-07  
UNI Faculty Panelist for the UNI New Faculty Orientation, Fall 2004  
UNI Chemical Educator Search Committee, 2003-2004  
Served as a poster presentation judge for the UNI Graduate College 8<sup>th</sup> Annual Symposium Program, April 1, 2015  
Served as a consultant for UNI Mathematics Department’s Project SOAR related to developing PreK-2 Mathematics Education Videos, November 18, 2009  
Represented UNI Science Education Methods Faculty in participating in Area Education Agency 267 Iowa Core Curriculum: Characteristics of Effective Instruction in Science Professional Development for K-12 Science Teachers and their School Teams, October 29, 2009  
Assisted with writing UNI Science Education Undergraduate and Graduate Self Study for External Academic Program Review, Fall 2005 & Spring 2006  
Worked to develop a collaboration between UNI College of Natural Sciences faculty and students and their counterparts at the Universidad Católica De Valparaíso, Valparaíso, Chile, 2001-2002  
Advised and supervised undergraduate and graduate exchange students from Herzen State Pedagogical University of Russia as part of the UNI College of Natural Sciences/Herzen Collaboration Program, Fall 1998 – 2002  
Assisted UNI efforts to submit outreach proposals for Iowa’s NSF EPSCoR proposed projects, Fall 2009 and 2010.

### ***State and National***

State of Iowa Science Leadership Team Member, 2023  
American Physical Society (APS) STEP UP Online Community Member, 2021-present  
Northeast Regional STEM Advisory Board Member, 2018-present  
Next Gen PET Faculty Online Learning Community (FOLC) Cluster Leader, 2016-present  
Iowa Agricultural Literacy Foundation Education Advisory Council Member, 2014-present  
Knowles Teacher Initiative Teaching Fellowship Selection Physical Science Advisor, 2011-2021, 2023  
ACT Science Reviewer, 2017-2018, 2020-2022  
ACT Aspire Periodic Classroom Science Assessments Grades 3-8 Expert Panel Reviewer, 2015  
ACT PLAN Assessment Review Panelist, 2012  
State of Iowa Physics Competition Rules/Advisory Committee, Fall 2003-present  
State of Iowa Physics Competition Coordinator, 2009-Present  
Presider for *Overview of High School Physics in the U.S.* Session of American Association of Physics Teachers Winter Meeting, New Orleans, LA, January 2013  
State of Iowa Reviewer of the Framework for K-12 Science Education Standards and Next Generation Science Standards Reviewer, 2011-12  
American Association of Physics Teachers Committee on Physics in High Schools Chair, 2011-12  
American Association of Physics Teachers Committee on Physics in High Schools Vice Chair, 2010-11  
American Association of Physics Teachers Committee on Physics in High Schools Member, 2010-13  
Manuscript Referee for *The Physics Teacher* journal and Physical Review Special Topics -PER, 2008-present  
State of Iowa Department of Education High School Science Iowa Core Curriculum Committee, 2005-06  
National Science Foundation Instrumentation and Laboratory Improvement Program Proposal Reviewer, 2004 & 1998  
Consultant on diversity issues to the American Institute of Physics/American Association of Physics Teachers/American Physical Society National Task Force on Undergraduate Physics, Fall 2002  
Iowa Section of the American Association of Physics Teacher's Representative to the Iowa Academy of Science Excellence in Science Teaching Awards Program for Physical Science, 1997-2001  
Iowa Section of the American Association of Physics Teacher's Vice President for Four-Year Colleges, 2002-03  
Iowa Academy of Science Committee on Committees and Elections, 2002-03  
Participated in the Iowa Science and Mathematics Teacher Educators Summit sponsored by the Iowa Math and Science Education Partnership (IMSEP) on August 14, 2009 at Grand View University, Des Moines, IA

### ***Community and Public Service***

As member of the UNI Physics Department Outreach committee and Director for UNI Science Education, I coordinate and conduct numerous outreach and professional development activities and programs for students and teachers including but not limited to the following:

- UNI Physics Coursework for Iowa 5-12 Physics and All Science Online & Distance Education Program Coordinator
- Help supervise the UNI Yager Science Education Resources & Outreach – curricula materials center for science for UNI faculty, staff, and students as well as K-12 science teachers.
- Serve on the State of Iowa Physics Competition Rules/Advisory Committee. The Physics Competition is for Iowa high school physics students. I serve as the coordinator for the State Physics Competition held each spring at the UNI McLeod Center.
- The UNI Science Education Update Conference for Iowa secondary science teachers held each spring.
- Facilitated After School Science Program with Alison Beharka, Pam Schmitt (Grades 7-8 science teacher), and Kristine Smith (after school program coordinator) at St. Patrick Catholic Elementary School in Cedar Falls, IA for Grades 4-8 students. Facilitated a number of STEM projects including students constructing and programming robots for FIRST LEGO LEAGUE competition, constructing and launching balloon and model rockets, designing and constructing toothpick bridges, and conducting scientific investigations, 2012-2015.
- Facilitated physics sessions at the AEA 267 Student Workshop from Talented and Gifted (TAG) Students, November 2014 & 2015.
- Facilitated an afternoon physics session with Alison Beharka and undergraduate students on rockets for Middle School students for the Meskwaki Summer STEM Camp coordinated by the UNI College of Education, June 2014 & 2015.

- Provided assistance and students with judging the FIRST LEGO League Robotics Regional Qualifier at the Cedar Heights Elementary School in Cedar Falls on December 5, 2009.
- Provided assistance with instruction and supervision of Grades 6-8 After School STEM Program at UNI Price Laboratory School, Fall 2009.
- Provided Faculty and Student Assistance with the Physics Day at Lost Island Water Park for Cedar Valley Catholic Schools, June 2005
- Participated as Shadow Sponsor for Hoover Middle School Student for the Expanded Learning Program, Waterloo Community Schools, May 2005
- Participated in the Iowa Regents' Academy for Mathematics and Science Conference to collaborate with other professionals at various levels and agencies on issues related to Math and Science Preservice Education and Professional Development opportunities that resulted in collaborating with AEA staff and UNI Science Education faculty in conducting a professional development workshop on assessment for K-12 Science Teachers in AEA6 and AEA7, Spring 2002

#### ***Graduate Advisor***

Served as Advisor for MA Science Education Thesis/Non-thesis Graduate Students: 8

Served on numerous MA Science Education Graduate Thesis/Non-Thesis Committees

Served on 3 Doctoral Student Thesis Committees

Beth Van Meeteren, PhD in Curriculum and Instruction, Completed in Spring 13.

Rosemary Geiken. Ed.D in Curriculum and Instruction, Completed in Spring 11.

Mohammed Al-Jaroudi. Ed.D in Curriculum and Instruction, Completed in Fall 09.

#### ***Graduate Research Supervision***

Investigating the effectiveness of the Iowa Physics Teacher Instruction and Resources (IPTIR) program, Meghan Reynolds, 2012-14

Investigating the Use of Ranking Tasks to Improve Student Conceptual Understanding in an Introductory High School Physics Course, Matthew Harding, 2009-10

UNI Physics Institute Program for Underprepared and Unendorsed Iowa High School Physics Teachers  
Julia Moeller, 2002-04

Enhanced Physics Resources and Instructional Strategies to Motivate Students (PRISMS) Project  
Alexandra Sokolova, 2000-02

Katya Denissova, 1998-2000

#### ***Undergraduate Advisor – Physics and Science Education***

Serves as lead advisor for over 30 undergraduate Secondary Science Teaching majors (Physics Teaching, Comprehensive Secondary Science Teaching, and Middle Level Science Teaching Dual), Post BA students in these areas, and students pursuing Teaching Endorsements in related areas. Serves as a New Student and Transfer Student Orientation and Registration Advisor for Science Education. Student Teaching advisor for Physics Teaching, Comprehensive Secondary Science Teaching, and Middle Level Science Teaching Dual Majors helping these students complete and submit applications for student teaching.

#### ***Undergraduate Research Supervision***

Virtual vs. In-Person Instruction: The Impact of Teachers' Understanding of Physics  
Madelyn Johnson with Jeffrey Morgan, Summer 2021

Aligning PRISMS PLUS with NGSS and Physics Education Research  
Juliana Huegerich, Summer 2019

Developing Standards- and Research-based High School Physics Instructional Units  
Kirsten Olson, Summer 2015

Iowa Physics Teacher Instruction and Resources (IPTIR)

Jeremy Hulshizer, Summer 2012

Matthew Hanselman and Emily Stumpff, Spring 2011 – Spring 2012

Tara Pleggenkuhle, Summer 2011

Crista Righe and Jarod Mazer, May 2010 – December 2011

Kira Maltas and Nathan Jacobsen, Fall 2009 – Spring 2010

Kimberly Leshner and Sarah Faust, Summer 2009

- UNI Professional Development and Outreach for High School Physics Teachers  
Megan Hart, Tim Schulte, and Todd Richter, Spring 2009
- UNI Physics Resources and Instruction for Secondary Science Teachers (PRISST) professional development program  
Danielle Cleasby (Summer 2006-08) and Andrew Meyer (Spring & Summer 2007)
- Ramps & Pathways Curriculum Development program  
Alison Gilchrist and Kelsy Knebel, Spring 2007 – Spring 2009
- Investigating the Effectiveness of the UNI Physics Institute on Participant Learning and Their Students' Learning and Applying the Results to Develop Innovative Physics Curricula  
Andrea Conley, Summer 2003 UNI Physics Department Undergraduate Research Fellowship
- UNI Physics Institute Program for Out of Area Iowa Physics Teachers  
Nathan Bergom, Summer 2002
- PRISMS Curriculum Development & Exploring Student Conceptions of the Atom in an Activity Based Physics Science Course for Elementary Education Majors  
Nora Taylor, Summer 2001 UNI Physics Department Undergraduate Research Fellowship
- An Investigation on Determining Effective Strategies in Addressing Student Preconceptions in Physics  
Ekaterina Chtchourova, Summer 2001 UNI Physics Department Undergraduate Research Fellowship
- PRISMS Enhancement  
Ekaterina Chtchourova, Spring 2001 – Fall 2001  
Matt Harding, Rebecca Krieg, and Gina Pugh, Summer 2000  
Deena Stanley and Dmitriy Gorshenin, Summer 1999
- Activity-based Modern Physics Instruction & Implementation (AMPII) Project  
Matt Harding, Marc Pederson, and Cathy Moore, Spring 1998 – 99  
Sam Long, Fall 1998
- Science and Mathematics: Implementation and Leadership in Educational Standards (SMILES) Project  
Matt Harding, Marc Pederson, and Cathy Moore, Spring 1998 – 99

## RESEARCH AND SCHOLARLY ACTIVITIES

### Grant Support

- PI, *Collaborative Research: Building Capacity for Cross-site Research on Promoting Noticing for Equity and Equitable Science Teaching Practice through Video Analysis*. NSF Robert Noyce Teacher Scholarship Capacity Building Program. \$14,249. 2022-23.
- PI, *Development of a Model Science Content and Methods Classroom and Laboratory to Support UNI Science Education Programs*. Roy J. Carver Charitable Trust. \$250,000. 2017-18.
- PI, *Integrating NGSS into UNI Secondary Science Curricular Resources & Courses*. Roy J. Carver Charitable Trust. \$60,600. 2017-18.
- PI, *Integration of Iowa Agriculture Literacy in Science Courses for Elementary Education Majors & Resources for Teachers*. \$10,000. 2016-17.
- CoPI, *Modernization of Liberal Arts Core Category IV natural Science & Technology Laboratories* with D. Saunders, P. Shand, L. Strauss, S. Morgan, & others. \$393,294. 2016-17.
- PI, *Iowa Farm Bureau STEM Career Outreach Years 2 - 3*. Iowa Farm Bureau. \$141,042. 2014-16.
- PI, *Expansion and Update of the UNI Science Education Resource Center*. Roy J. Carver Charitable Trust. \$125,000. 2014-16.
- PI, *Integrating Crosscutting Concepts in Iowa Science Classrooms*. Iowa Department of Education Title II Mathematics and Science Partnership. \$512,805. 2014-17.
- PI, *Iowa Farm Bureau STEM Career Outreach*. Iowa Farm Bureau. \$50,000. 2013-14
- CoPI. *Iowa Regents Modeling Workshops in Physics Year 3: University of Northern Iowa*. Iowa Governor's STEM Advisory Council with funding from the Roy J. Carver Charitable Trust. \$103,883. 2013-14.
- PI. *Iowa Physical Science Teacher Instruction and Resources*. Board of Regents, State of Iowa, and Title II. \$448,807. January 2012. Not funded.
- CoPI. *Collaborative Research: Coaching and Mentoring for Preschool Science, Technology, Engineering, and Math* with B. Zan and others. National Science Foundation. \$2,705,740. January 2012. Not funded.
- PI. *Iowa Physics Teacher Instruction and Resources (IPTIR) – PLUS*. Board of Regents, State of Iowa, and Title IIA. \$28,565. 2011-12.

- CoPI. *Improving Teaching in Science, Technology, Engineering, and Mathematics in Early Childhood* with B. Zan and others. National Science Foundation DRK proposal, \$3,499,973. January 2011. Not funded.
- CoPI. *UNI-Leadership Institute for Science Teaching (UNI-LIST)* with C. Lee, L. Burns, C. Chancey, and Bill Harwood. National Science Foundation Mathematics Science Partnership Teacher Institute proposal, \$2,994,762. July 2010. Not funded.
- PI. *Iowa Physics Teacher Instruction and Resources* proposal, Iowa Department of Education, Title II Part B Math and Science Partnership Additional Funds, \$35,495. 2010.
- Collaborated with UNI Physics faculty to submit proposal for Iowa's National Science Foundation EPSCoR Project. Fall 2009 (Not Funded) and 2010.
- Letter of interest submitted for consideration to request PhysTEC funding to become a site to implement departmental reform in order to increase the number of physics teachers produced. Fall 2009 and 2010. Not funded.
- PI. *Iowa Physics Teacher Instruction and Resources* with J. Morgan and others, Board of Regents, State of Iowa, and Title II, \$485,467. 2009-2012.
- PI. *UNI Professional Development and Outreach for Future and Existing High School Physics Teachers*, Iowa Mathematics and Science Education Partnership, \$28,382. Spring 2009.
- Co-PI. *Air Dynamics: A constructivist approach to physical science*, National Science Foundation, \$1,682,766. Fall 2008. Not funded.
- Co-PI, *UNI-Science Leadership and Innovative Partnerships (UNI-SLIP) Mathematics and Science Partnership Start Program* with C. Lee, D. Lee, B. Zan, D. Hayek, T. Gregerson, & F. Kohler., National Science Foundation, \$235,174. Spring 2008. Not Funded.
- PI, *UNI Physics and Science Education Professional Development and Outreach Instructional Technology Integration*, Roy J. Carver Charitable Trust, \$215,083. 2007-09.
- PI, *Physics Resources and Instruction for Secondary Science Teachers (PRISST) – A Professional Development Program for Out-of-Field High School Physics Teachers*, Board of Regents, State of Iowa, and Title II, \$283,866. 2006-08.
- Physics Consultant, *Ramps and Pathways: A Constructivist Approach to Teaching Physical Science* program with R. Devries, B. Zan, C. Sales, & J. Uhlenberg, National Science Foundation, \$1,732,503. 2006-2010.
- Co-PI, CCLI-Phase 1 Exploratory: *Creation and Implementation of an Interdisciplinary Nanoscience Curriculum* with C. Chancey, D. Bartak, D. Del Carlo, and M. Walter, National Science Foundation, \$149,908. 2007-09.
- Co-PI, *National Collaboration for Education in Nanoscience and Technology* Proposal with D. Zollman, P. Anderson, N.S. Rebello, J. Staver, and others, National Science Foundation EHR-Teacher Institutes, \$402,186 (UNI portion) of \$4,992,556. Spring 2004. Not Funded.
- PI, University of Northern Iowa Collaborative Proposal with Kansas State University Physics Education Research Group (S. Rebello, P. Engelhardt, & D. Zollman): *Micro-MODELS: Microscoping Modeling of Devices in the Everyday Lives of Students: Active-Learning, Context Rich Physical Science*, National Science Foundation, \$824,990. Fall 2003. Not Funded.
- Director and Lead Instructor, *UNI Physics Institute Program for Underprepared and Unendorsed High School Physics Teachers*, UNI Science and Mathematics Renewal Program funded by an U.S. Dept. of Education Grant, \$96,342. 2001-03.
- Co-PI, *Physics Resources and Instructional Strategies for Motivating Students (PRISMS) Enhancement*, National Science Foundation & UNI Supplemental Grant and Extension, \$72,110. 2001-02.
- Co-PI, *PRISMS Enhancement* with R. Unruh & T. Cooney, National Science Foundation, \$670,000. 1998-2001.
- Co-PI, *Science and Mathematics: Implementation and Leadership in Educational Standards (SMILES) – Phase II* with C. Lee and others, Iowa State Board of Regents Eisenhower Grant Program, \$130,000. 1998-99.
- Co-PI, *Science and Mathematics: Implementation and Leadership in Educational Standards (SMILES)* with C. Lee and others, Iowa State Board of Regents Eisenhower Grant Program, \$122,000. 1997-98.
- PI, *Activity-based Modern Physics Instruction and Implementation (AMPPI)*, UNI College of Natural Sciences Dean's ISGC Discretionary Funds, \$1,600, January 1999.
- PI, *Activity-based Modern Physics Instruction and Implementation (AMPPI)*, UNI Graduate College, \$500, June 1998.
- PI, *Activity-based Modern Physics Instruction and Implementation (AMPPI)*, Iowa Space Grant Consortium, \$10,000, December 1997.

- PI, UNI Provost Faculty Technology Equipment Grant, \$5,000, November 1997.

### **Refereed Journals**

- Goldberg, F., Price, E., Basir, M., **Escalada, L.**, Maier, S., Sahyun, S., Snyder, & T., Zeng, L. (In Preparation). Value Creation in a Pedagogically-focused Faculty Online Learning Community. *Journal of College Science Teaching*.
- Arias, A., Criswell, B., Ellis, J., **Escalada, L.**, Forsythe, M., Johnson, H., Mahar, D., Palmeri, A., Parker, M., & Riccio, J. (2021). The Framework for Analyzing Video in Science Teacher Education (FAVSTE). *Journal of Science Teacher Education*, **33**(6), 621-640.
- Arias, A., Criswell, B., Ellis, J., **Escalada, L.**, Forsythe, M., Johnson, H., Mahar, D., Palmeri, A., Parker, M., & Riccio, J. (2020). The Framework for Analyzing Video in Science Teacher Education and Examples of Its Broad Applicability. *Innovations in Science Teacher Education*, **5** (4).
- Like C., Morgan, J., **Escalada, L.**, & Burns, L. (2019). Teaching phenomena with NGSS – A complete unit. *The Physics Teacher*, **57**(3), 152-157.
- Van Meeteren, B. D., & **Escalada, L. T.** (2010). Science and Literacy Centers: This win-win combination enhances skills in both areas. *Science & Children*, **47** (7), 74 -78.
- Unruh, R., & **Escalada, L. T.** (2006). Revving it up! Helping students investigate the forces that power a motor. *Iowa Science Teachers Journal*, **33**(2), 16-21.
- Escalada, L. T.**, Rebello, N. S., & Zollman, D. A. (2004). Student explorations of quantum effects in LEDs and luminescent devices. *The Physics Teacher*, **42** (3), 173-179.
- Escalada, L. T.**, Unruh, R., Cooney, T., & Foltz, J. (2001). Students see the light: Investigating luminescence and incandescence through a three-part learning cycle. *The Science Teacher*, **68**(4), 40-43.
- Rebello, N. S., Cumarantunge, C., **Escalada, L. T.**, & Zollman, D. A. (1998). Simulating the spectra of light sources. *Computers in Physics*, **12**(1), 28-33.
- Rebello, N. S., Ravipati, C., Zollman, D. A., & **Escalada, L. T.** (1997). Computer simulation of P-N junction devices. *American Journal of Physics*, **65**(8), 765-773.
- Escalada, L. T.** & Zollman, D. A. (1997). An investigation on the effects of using interactive digital video in a physics classroom on student learning and attitudes. *Journal of Research in Science Teaching*, **34**(5), 467-489.
- Escalada, L. T.**, Baptiste, Jr., H. P., Zollman, D. A., & Rebello, N. S. (1997). Physics for all: How technology can spark universal success in the physics classroom. *The Science Teacher*, **64**(2).
- Escalada, L. T.**, Grabhorn, R. P., & Zollman, D. A. (1996). Applications of interactive digital video in a physics classroom. *Journal of Educational Multimedia and Hypermedia*, **5**(1), 73-97.

### **Curriculum Materials-Instructional Materials**

- Escalada, L.T.** (2008). Physics Inquiry for Ramps and Pathways Facilitator's Guide. Cedar Falls, IA: University of Northern Iowa.
- Cooney, T. M., **Escalada, L. T.**, Unruh, R. D. (2008). *PRISMS (Physics Resources and Instructional Strategies for Motivating Students) Plus CD version*. Cedar Falls, IA: UNI Physics Department.
- Cooney, T. M., **Escalada, L. T.**, Unruh, R. D. (2005). *PRISMS (Physics Resources and Instructional Strategies for Motivating Students) Plus – A High School Physics Resource consisting of 45 learning cycles of student activities, student conceptual support materials, testbank, and comprehensive teacher notes*. Fairfield, OH: Centre Pointe Learning.
- Escalada, L. T.**, Rebello, N. S., & Zollman, D. A. (2002). Luminescence: It's cool light!: Investigations on the quantum effects in luminescent materials and devices. In Kansas State University Physics Education Research Group, *Visual Quantum Mechanics – The Original CD-ROM*. Lexington, KY: Ztek Co. Multimedia for Physics Education (<http://www.ztek.com/>).
- Escalada, L. T.**, Rebello, N. S., & Zollman, D. A. (2002). *Solids & Light: Investigations on the quantum effects in light emitting diodes*. In Kansas State University Physics Education Research Group, *Visual Quantum Mechanics – The Original CD-ROM*. Lexington, KY: Ztek Co. Multimedia for Physics Education.
- Escalada, L. T.**, Grabhorn, R. P., & Zollman, D. A. (1994). *Interactive Digital Video Activities and Teacher's Manual*. Manhattan, KS: Kansas State University.



### **Curriculum Materials-Computer Programs**

- Cumaranatunge, C., Rebello, N. S., **Escalada, L. T.**, & Zollman, D. A. (1997). *Energy Band Creator Computer Program*. Manhattan, KS: Kansas State University. 1998 *Computers in Physics* Eighth Annual Educational Software Contest Winner with N. S. Rebello, C. Cumaranatunge, & D. A. Zollman.
- Cumaranatunge, C., Rebello, N. S., **Escalada, L. T.**, & Zollman, D. A. (1997). *Spectroscopy Software Package*. Manhattan, KS: Kansas State University. 1997 *Computers in Physics* Seventh Annual Educational Software Contest Winner with N. S. Rebello, D. A. Zollman, & C. Cumaranatunge for *Spectroscopy Software Package*.
- Ravipati, C., Rebello, N. S., Zollman, & **Escalada, L. T.** (1997). *Semiconductor Device Simulator Computer Program*. Manhattan, KS: Kansas State University.

### **Conference Proceedings, Textbooks, and Book Chapters**

- Barness, A., Counsell, S., Donegan-Ritter, M., **Escalada, L.**, Fitzgerald, L., Peterson, S., Smith, B., Uhlenberg, J., Vander Zanden, S. & VanMeeteren, B. (In Preparation). *Investigating Water with Young Children*. New York, New York: Teachers College Press.
- Barness, A., Counsell, S., Donegan-Ritter, M., **Escalada, L.**, Fitzgerald, L., Peterson, S., Smith, B., Uhlenberg, J., Vander Zanden, S. & VanMeeteren, B. (In Preparation). *Investigating Light & Shadow with Young Children*. New York, New York: Teachers College Press.
- Barness, A., Counsell, S., Donegan-Ritter, M., **Escalada, L.**, Fitzgerald, L., Peterson, S., Smith, B., Uhlenberg, J., Vander Zanden, S. & VanMeeteren, B. (In Preparation). *Investigating Ramps & Pathways with Young Children*. New York, New York: Teachers College Press.
- Robinson, S., McKean, M., Swift, C., Newton, W., **Escalada, L.**, Maier, S., Hsu, L., Snyder, T., Wedding Crowell, K., Orloff, T., Palomina, J, More, T., Mitchell, D., and Locke, R. (2020). *Chapter 2: Next Gen PET Online Course Structures. Resource Guide for Teaching Next Gen PET Online: Version 1 (Public)*. Next Gen PET FOLC.
- Zan, B., **Escalada, L.**, Uhlenberg, J., Geiken, R., Van Meeteren, B., Counsell, S., Yoshizawa, S., & Sander, M. (2019). *STEM Learning with Young Children: Inquiry Teaching with Ramps and Pathways (Translated into Simplified Chinese)*. Nanjing, China: Nanjing Normal University Press.
- Zan, B., **Escalada, L.**, Uhlenberg, J., Geiken, R., Van Meeteren, B., Counsell, S., Yoshizawa, S., & Sander, M. (2016). *STEM Learning with Young Children: Inquiry Teaching with Ramps and Pathways*. New York, New York: Teachers College Press.
- Escalada, L. T.**, & Moeller, J. (2006). The challenges of designing and implementing effective professional development for out-of-field high school physics teachers. In P. Heron, L. McCullough, & J. Marx (Eds.), *2005 Physics Education Research Conference Proceedings* (pp. 11 – 14). Melville, New York: American Institute of Physics.
- Escalada, L. T.** (2003). Luminescence or Incandescence?: a physical science lesson plan. In C. A. Grant and C. E. Sleeter, *Turning on Learning: Five Approaches for Multicultural Teaching Plans for Race, Class, Gender, and Disability, 3<sup>rd</sup> edition*. New York, NY: Wiley & Sons.
- Escalada, L. T.** (July, 2001). An investigation on the impact of implementing Visual Quantum Mechanics on student learning and student instructor beliefs. In S. Franklin, J. Marx, & K. Cummings (Eds.), *Proceedings of the 2001 Physics Education Research Conference* (pp. 21-24). Rochester, NY: National Physics Education Research Conference.

### **Other Published Writings**

- Escalada, L. T.** (June, 1997). Investigating the applicability of activity-based quantum mechanics in a few high school physics classrooms. Doctoral Dissertation at Kansas State University.
- Escalada, L. T.** (May, 1995). An investigation on the effects of using interactive digital video in a physics classroom on student learning and attitudes. Master's Thesis at Kansas State University.

### **Invited Presentations**

- Escalada, L.T.** (February, 2023). *Physics and Science Education Research*. UNI Department of Physics Colloquium.
- Escalada, L.T., & Beharka, A.A.** (April, 2022). *How to Integrate STEM in Your Classroom with NGSS*. UNI Science Education Update Conference.
- Escalada, L.T., & Beharka, A.A.** (April, 2022). *Anchoring Phenomena with Light & Contact Forces*. UNI Science Education Update Conference.
- Escalada, L.T.** (February, 2022). *Physics and Science Education Research*. UNI Department of Physics Colloquium.

- Escalada, L.T.** (February, 2021). *Using PER to Develop and Adapt PRISMS PLUS*. UNI Department of Physics Colloquium.
- Arias, A., Criswell, B., Ellis, J., **Escalada, L.**, Forsythe, M., Johnson, H., Mahar, D., Palmeri, A., Parker, M., & Riccio, J. (August, 2020). *ATLAS and FAVSTE: A Tool and Framework for Using Video in Teacher Preparation*. American Association of Colleges for Teacher Education Webinar.
- Escalada, L.T.**, Like, C., Morgan, J., & Huegerich, J. (July, 2020). *Using PER to Develop and Adapt PRISMS PLUS*. American Association of Physics Teachers 2020 Summer Virtual Meeting.
- Swift, C., Newton, W., & **Escalada, L.** (July, 2020). *Teaching NGP Online – Class Structures*. Next Gen PET Faculty Online Learning Community (FOLC) Virtual Conference & Sharathon.
- Escalada, L.T.** (February, 2020). *UNI Physics & Science Education Research and Outreach*. UNI Department of Physics Colloquium.
- Escalada, L.**, Gilson, T., Juby, C., & Milambiling, J. (November, 2019). *Voices of Experience: Strategies and Techniques to Foster Student Learning and Success in an Online Environment Panel Discussion*. UNI Continuing Education & Special Programs 7<sup>th</sup> Annual Distance Education Conference, Cedar Falls, IA.
- Huegerich, J., & **Escalada, L.** (October, 2019). *Adapting PRISMS PLUS to meet the Next Generation Science Standards and Education Research*. UNI Department of Physics Colloquium, Cedar Falls, IA.
- Escalada, L.T.** (February, 2019). *Actively Engaging Students in Physics*. UNI Department of Physics Colloquium.
- Van Meeteren, B., & **Escalada, L.T.** (October, 2018). *Implementing STEAM in Early Childhood classroom using Ramps & Pathways*. CKE-EDU Forum on STEAM Education & Application, Shanghai, China.
- Escalada, L.T.**, & Van Meeteren, B. (October, 2018). *Assessment of STEM Content and Practices in Young Children and the Inquiry Teaching Model*. CKE-EDU Forum on STEAM Education & Application, Shanghai, China.
- Van Meeteren, B., & **Escalada, L.** (October, 2018). *STEM Experiences at the Center of Early Education: An American Perspective*. Fourth International Summit Forum by MATT, Shanghai, China.
- Escalada, L.T.** (January, 2018). *Physics & Science Education Research In and Out of the Classroom*. UNI Department of Physics Colloquium, Cedar Falls, IA.
- Escalada, L.T.** (February, 2017). *Physics & Science Education Research – Curriculum & Professional Development*. UNI Department of Physics Colloquium, Cedar Falls, IA.
- Escalada, L.T.** (February, 2016). *Physics Education Research: Curriculum & Professional Development*. UNI Department of Physics Colloquium, Cedar Falls, IA.
- Escalada, L.T.** (February, 2015). *Physics Education Research in Secondary Science*. UNI Department of Physics Colloquium, Cedar Falls, IA.
- Escalada, L.T.** (January, 2014). *Physics Education Research-Professional Development for Science Teachers*. UNI Department of Physics Colloquium, Cedar Falls, IA.
- Escalada, L.T.** (February, 2013). *UNI Physics Professional Development and Outreach*. UNI Department of Physics Colloquium, Cedar Falls, IA
- Escalada, L.T.**, Morgan, J., Burns, L., & McLaughlin, S. (September, 2013). *Iowa Regents Modeling and PRISMS Workshop*. Iowa Governor’s STEM Advisory Council 2013 STEM Teacher Educators’ Conference.
- Escalada, L.T.** (April, 2012). *UNI Physics Education*. State of Iowa Board of Regents April Meeting, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L.T.** (February, 2012). *Using the Learning Cycle for Teaching Methods for Physics Teacher Preparation*. American Association of Physics Teachers Association Winter Meeting, Ontario, California.
- Escalada, L.T.**, Morgan, J., & Stone, J. (October, 2011). *Iowa Physics Teacher Instruction and Resources*. State of Iowa Title II Conference, Des Moines, IA.
- Escalada, L.T.** (August, 2011). *PRISMS PLUS – A High School Physics Curriculum*. American Association of Physics Teachers Association Summer Meeting, Omaha, Nebraska.
- Escalada, L.T.**, Morgan, J., & Stone, J. (October 2010). *Iowa Physics Teacher Instruction and Resources*. State of Iowa Title II Conference, Des Moines, IA.
- Escalada, L.T.**, Morgan, J., & Stone, J. (October 2009). *Iowa Physics Teacher Instruction and Resources*. State of Iowa Title II Conference, Des Moines, IA.
- Chancey, C. & **Escalada, L.T.** (March, 2009). *The Cold Logic of One In-Service Physics Teacher Education Program: PRISST – Physics Resources & Instruction for Secondary Science Teachers*. Physics Teachers Education Coalition Conference, Pittsburgh, PA.
- Escalada, L.T.**, & Gilchrist, A. (March, 2009). *Ramps and pathways: A constructivist to teaching physical science*. UNI NSTA Student Chapter Meeting, Cedar Falls, IA.
- Escalada, L.T.**, Hart, M., Richter, T., & Schulte, T. (March, 2009). *UNI/AEA 267 Regional Physics Olympics Competition*. UNI NSTA Student Chapter Meeting, Cedar Falls, IA.

- Escalada, L. T.** (April, 2007). *A brief overview of UNI Physics and Science Education Professional Development Programs*. College of Natural Sciences College Advisory Board Meeting, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T.** (March, 2007). *UNI/AEA 267 Regional Physics Olympics Competition*. UNI Student Physics Club, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T.** (February, 2007). *Ramps and Pathways: Professional Development in Physical Science*. Freeburg School, University of Northern Iowa, Waterloo, IA.
- Escalada, L. T.** (January, 2007). *UNI Physics and Science Education Research: PreK-12 Curriculum and Professional Development*. Physics Department Colloquium, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T.** (April, 2006). *Moving to Inquiry*. AEA 267 Science Celebrates Inquiry. AEA 267 Media Centers, Marshalltown and Clear Lake, IA.
- Escalada, L. T.** (April, 2006). *PRISMS PLUS and UNI Physics Professional Development and Outreach Opportunities for Teachers*. AEA 267 Science Celebrates Inquiry. AEA 267 Media Centers, Marshalltown and Clear Lake, IA.
- Escalada, L. T.** (April, 2006). *UNI/AEA 267 Regional Physics Olympics Competition*. UNI Student Physics Club, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T., & Unruh, R.** (March, 2006). *PRISMS PLUS: A comprehensive high school physics curriculum Workshop*. Physics Teacher Education Coalition (PTEC) 2006 Conference, University of Arkansas, Fayetteville, AR.
- Escalada, L. T., & Moeller, J.** (March, 2006). *The challenges of designing and implementing effective professional development for out-of-field high school physics teachers* poster presentation. Physics Teacher Education Coalition (PTEC) 2006 Conference, University of Arkansas, Fayetteville, AR.
- Escalada, L. T.** (April 2006). *UNI/AEA 267 Regional Physics Olympics Competition*. UNI Student Chapter of the Student Chapter of the National Science Teachers Association, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T.** (November, 2005). *University of Northern Physics Outreach*. AEA 267 Science Celebrates Inquiry. AEA 267 Media Centers, Clear Lake and Cedar Falls, IA.
- Escalada, L. T., & Moeller, J.** (August, 2005). *The challenges of designing and implementing effective professional development for out-of-field high school physics teachers* poster presentation. Annual meeting of the National Physics Education Research Conference, University of Utah, Salt Lake City, UT.
- Unruh, R., & Escalada, L. T.** (January, 2005). *PRISMS PLUS Poster Exhibit*. NSF Instructional Materials Development Science and Mathematics Curriculum Developers Conference, Holiday Inn Hotel and Suites, Alexandria, VA.
- Escalada, L. T.** (April, 2003). *UNI Physics Institute Program*. UNI Physics Update Conference, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T., & Unruh, R.** (April, 2003). *PRISMS PLUS Workshop*. UNI Physics Update Conference, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T.** (November, 2002). *Enhanced PRISMS: Physics content and methods workshop for Chilean science teachers*. University of Northern Iowa, Cedar Falls, IA.
- Countryman, L., Stone, J., Escalada, L.T., et al.** (June, 2002). *UNI, AEA 6, and AEA 7 Workshop on Scoring And Reporting Constructed Assessments in Science for K-12 Science Teachers*. AEA 7 Resource Center, Cedar Falls, IA.
- Escalada, L. T., & Unruh, R.** (June, 2002). *Iowa Quarknet/PRISMS Workshop for High School Physics Teachers on Modern Physics*. University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T.** (January, 2002). *Science Preparation for K-12 Teachers*. Winter meeting of the American Association of Physics Teachers, Philadelphia, PA.
- Escalada, L. T.** (October, 2001). *Enhanced PRISMS: Physics content and methods workshop for Chilean science teachers*. University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T.** (July, 2001). *Investigating the Impact of Implementing Visual Quantum Mechanics on Student Learning and Student/Instructor Beliefs*. Physics Education Research Conference at the Summer Meeting of the American Association of Physics Teachers, Rochester, NY.
- Escalada, L. T., Taylor, N., & Chtchourova, E.** (July, 2001). *Adapting PER Ideas to K-12 Teacher/Student Instruction and High School Curriculum*. Summer Meeting of the American Association of Physics Teachers, Rochester, NY.

- Escalada, L. T.** (May, 2001). *Using Enhanced PRISMS and Technology to Teach University Introductory Science*. Invited presentations for University Physics and Chemistry faculty. Universidad Católica De Valparaíso, Valparaíso, Chile.
- Escalada, L. T.** (October, 2000). *Activity-based physical science: Science content and methods workshop for Chilean science teachers*, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T., Unruh, R., & Cooney, T.** (July, 2000). *PRISMS Enhancement Workshop for high school field testers*. University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T., & Unruh, R.** (March, 2000). *PRISMS Enhancement Workshop*. UNI Physics Update Conference, University of Northern Iowa, Cedar Falls, IA.
- Unruh, R., & Escalada, L.T.** (February, 2000). *PRISMS Enhancement Exhibit*. National Science Foundation Conference for Developers of Secondary School Science and Mathematics Curriculum Projects, Alexandria, VA.
- Escalada, L. T.** (October, 1999). *Activity-based physical science: Science content and methods workshop for Chilean science teachers*, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T., & Johnson, N.** (October, 1999). *Enhanced PRISMS: Exploring new PRISMS activities Workshop*. Iowa Science Teachers Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Escalada, L. T.** (June, 1999). *Diversity, Equity, and Instructional Technologies*. Science and Mathematics: Implementation and Leadership in Educational Standards – Phase II Summer Institute, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T.** (April, 1999). *Activity-based physical science: Investigating luminescence*. Science Content and Methods Workshop for Chilean University Faculty, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T.** (April, 1999). *Technology in the math and science classroom*. Science Content and Methods Workshop for Chilean University Faculty, University of Northern Iowa, Cedar Falls, IA.
- Harding, M., Moore, C., Pederson, M., Long, S., & Escalada, L.** (October, 1998). *Activity-based Modern Physics Instruction and Implementation Project*. Student Poster Session at the Eighth Annual Iowa Space Grant Conference, University of Iowa, Iowa City, IA.
- Escalada, L. T.** (October, 1998). *Activity-based Modern Physics Instruction and Implementation Project*. ISGC Science/Technology Grant Opportunities. Iowa Science Teachers Section Fall Conference, Des Moines, IA.
- Escalada, L. T.** (October, 1998). *Activity-based physical science: Science content and methods workshop for Chilean science teachers*, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T., Claes, D., Glasmacher, T., & Petit, K.** (August, 1998). *Crackerbarrel panel discussion on New Faculty: Experiences and Concerns*. Summer Meeting of the American Association of Physics Teachers, University of Nebraska-Lincoln, Lincoln, NE.
- Escalada, L. T.** (March, 1998). *Using Technology in Activity-based and Interdisciplinary Instruction to Teach Modern Physics*. Physics Update Conference, University of Northern Iowa, Cedar Falls, IA.
- Rebello, N. S., Cumarantunge, C., Zollman, D. A., & Escalada, L. T.** (January, 1998). *Energy Band Creator*. Winter meeting of the American Association of Physics Teachers, Phoenix, AZ.
- Escalada, L. T., & Hogg, K.** (August, 1997). *The use of classroom observation protocols in the physics classroom*. Working Session at the Summer meeting of the American Association of Physics Teachers, University of Denver, Denver, CO.
- Rebello, N. S., Cumarantunge, C., Zollman, D. A., & Escalada, L. T.** (January, 1997). *Spectroscopy*. Winter Meeting of the American Association of Physics Teachers, Phoenix, AZ.
- Zollman, D., & Escalada, L.T.** (January 1997). *The influence of the science standards on college-level physics courses for elementary education majors*. Winter Meeting of the American Association of Physics Teachers, Phoenix, AZ.
- Escalada, L. T., & Zollman, D. A.** (June, 1996). *Visual Quantum Mechanics and Physics InfoMall*. Workshops presented for high school and college physics teachers attending the Modeling Workshops at the University of Illinois at Chicago and at Arizona State University at Tempe, AZ.

#### **Contributed Presentations**

- Johnson, H., Riccio, J., Arias, A., Criswell, B., Ellis, J., Escalada, L., Forsyth, M., & Robinson, A.** (January, 2023). *Seeing the equity in science classroom teaching and learning through video analyses*. International Conference of the Association for Science Teacher Education, Salt Lake City, UT.

- Arias, A., Criswell, B., Ellis, J., **Escalada, L.**, Forsyth, M., Johnson, H., & Riccio, J. (July, 2022). *Building Capacity For Cross-Site Research on Promoting Noticing for Equity and Equitable Science Teaching Practice Through Video Analysis Poster*. National Science Foundation Noyce Summit.
- Escalada, L.**, & Morgan, J. (November, 2021). *UNI Physics Courses that lead to Iowa Physics Teaching Endorsement*. Iowa American Association of Physics Teachers Fall Meeting.
- Escalada, L.**, & Morgan, J. (October, 2021). *Providing Professional Growth for High School Physics Teachers*. Iowa Science Teachers Section of the Iowa Academy of Science Fall Conference.
- Johnson, M., **Escalada, L.**, & Morgan, J. (July, 2021). *Virtual vs In-Person Instruction: The Impact on Teachers' Understanding of Physics*. UNI Summer Undergraduate Research Program Symposium
- Arias, A., Criswell, B., Ellis, J., **Escalada, L.**, Forsyth, M., Johnson, H., Mahar, D., Palmeri, A., Parker, M., & Riccio, J. (April, 2021). *Designing, Facilitating, and Studying Video Analysis in Teacher Education Using the FAVSTE*. Annual Conference of the American Educational Research Association.
- Arias, A., Criswell, B., Ellis, J., **Escalada, L.**, Forsyth, M., Johnson, H., Mahar, D., Palmeri, A., Parker, M., & Riccio, J. (January, 2021). *Updates and Applications of the FAVSTE: Models of Video Analysis Use Across Teacher Education Programs*. Association of Science Teacher Education International Virtual Conference.
- Escalada, L.**, More, T., Beharka, A., Boudreaux, & Newton, W. (January, 2021). *Scientific Explanations: Narrative Structure, Prompts, and Rubrics*. American Association of Physics Teachers Association 2021 Winter Virtual Meeting.
- Escalada, L.T.** & Beharka, A. (July, 2020). *Transitioning to Online Instruction with Next Gen PET*. American Association of Physics Teachers Association 2020 Summer Virtual Meeting.
- Escalada, L.**, Beharka, A., Boudreaux, A., More, T., & Newton, W. (March 2020). *Writing Scientific Explanations – Templates & Rubrics*. Next Gen PET Faculty Online Learning Community (FOLC) Virtual Conference & Sharathon.
- Arias, A., Criswell, B., Ellis, J., **Escalada, L.**, Forsyth, M., Johnson, H., Mahar, D., Palmeri, A., Parker, M., & Riccio, J. (January, 2020). *Models of Video Analysis Use Across Teacher Education Programs*. Association of Science Teacher Education International Conference, San Antonio, TX.
- Escalada, L.**, & Morgan, J. (October, 2019). *UNI Physics Teaching Endorsement Program*. Iowa Academy of Science Iowa Science Teaching Section Fall Conference, DMACC, Ankeny, IA
- Huegerich, J., & **Escalada, L.** (August, 2019). *Aligning PRISMS PLUS with NGSS and Physics Education Research Poster*. University of Northern Iowa Summer Undergraduate Research Symposium, Cedar Falls, IA.
- Del Carlo, D. & **Escalada, L.T.**, & Plein, T. (October, 2016). *Teacher Centered Development of NGSS Aligned Curriculum*. Iowa Council of Teachers of Mathematics and Iowa Academy of Science – Iowa Science Teaching Section Math and Science Fall Conference, Valley High School, West Des Moines.
- Escalada, L.T.**, Del Carlo, D., & Boesdorfer, S. (September, 2015). *Supporting Iowa's Science Teachers to Address Cross Cutting Concepts in the NGSS*. Iowa Council of Teachers of Mathematics and Iowa Academy of Science – Iowa Science Teaching Section Math and Science Fall Conference, Valley High School, West Des Moines.
- Escalada, L.T.**, Morgan, J., Burns, L., & McLaughlin, S. (October, 2013). *Supporting Iowa High School Physics and Physical Science Teachers to Address NGSS*. Iowa Council of Teachers of Mathematics and Iowa Academy of Science-Iowa Science Teaching Section Math Science Fall Conference 2013, Iowa State University, Ames, IA.
- Morgan, J., & **Escalada, L.** (January, 2013). *Training In-Service High School Physics Teachers in Iowa*. American Association of Physics Teachers Winter Meeting, New Orleans, LA.
- Escalada, L.**, Morgan, J., Hulshizer, J., Reynolds, M. (October, 2012). *Professional Development for Iowa High Physics Teachers*. Iowa Academy of Science – Iowa Science Teacher Section Fall Conference, Iowa State University, Ames, IA
- Escalada, L.**, & Beharka, A. (August, 2012). *PRISMS – A high school physics curriculum workshop*. American Association of Physics Teachers Summer Meeting, Philadelphia, Pennsylvania.
- Hanselman, M., Stumpff, E., Morgan, J., & **Escalada, L.** (August, 2011). *Examining high school physics teachers' use of resources* poster. American Association of Physics Teachers Summer Meeting, Omaha, Nebraska.
- Hulshizer, J., Morgan, J., & **Escalada, L.** (August, 2011). *Using the RTOP to Gauge Implementation of IPTIR Program Goals*. American Association of Physics Teachers Summer Meeting, Omaha, Nebraska.
- Stumpff, E., Morgan, J., **Escalada, L.**, & Hanselman, M. (August, 2011). *Comparing Conceptual Understanding of Physics Teachers and Students* poster. American Association of Physics Teachers Summer Meeting, Omaha, Nebraska.

- Zan, B. & Escalada, L.T. (April, 2011). *Ramps and Pathways: Evaluation of an Inquiry-Based Approach to Engaging Young Children in Physical Science*. 2011 American Educational Research Association Annual Meeting, New Orleans, LA.
- Escalada, L.T., & Zan, B. (January, 2011). *Ramps and Pathways: An inquiry-based approach to physical science*. 2011 Winter American Association of Physics Teachers Meeting, Jacksonville, FL.
- Escalada, L.T. (November, 2010). *Iowa Physics Teacher Instruction & Resources*. Iowa American Association of Physics Teachers 2010 Fall Meeting, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T., & Morgan, J. (July, 2010). *UNI Physics Teacher Preparation Programs for Undergraduates and Existing Teachers*. 2010 Summer American Association of Physics Teachers Meeting, Portland, Oregon.
- Zan, B, Escalada, L.T., & Geiken, R. (March, 2010). *Ramps and Pathways: A Constructivist approach to teaching physical science*. National Science Teachers Association Conference, Philadelphia, PA.
- Escalada, L.T., & Morgan, J. (February, 2010). *Iowa Physics Teacher Instruction and Resources (IPTIR)*. American Physical Society/American Association of Physics Teachers Meeting, Washington, D.C.
- Zan, B., Van Meeteren, B., Escalada, L.T. (November, 2009). *Rolling, Spinning, Flowing, and Blowing: An Inquiry-Based Approach to Physical Science (Pre-K through Grade 2) that is Intellectually Rigorous and Developmentally Appropriate*. National Association for the Education of Young Children Conference, Washington, D.C.
- Zan, B., & Escalada, L.T. (November 2009). *Ramps and Pathways – A Constructivist Approach to Teaching Physical Science* Poster. National Science Foundation Discovery Research K-12 PI Meeting, Washington, D.C.
- Escalada, L.T., Morgan, J., Couch Breitbach, K., & Burns, L. (October 2009). *Iowa Physics Teacher Instruction and Resources*. Iowa Science Teaching Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Escalada, L.T. (March, 2009). *PRISST: Professional Development for Out-of-Field High School Physics Teachers* Poster. Physics Teachers Education Coalition Conference, Pittsburgh, PA.
- Escalada, L.T., & Morgan, J. (February, 2009). *PRISST: Professional Development for Out-of-Field High School Physics Teachers* Poster. American Association of Physics Teachers Winter Meeting, Chicago, IL.
- Escalada, L.T. (February, 2009). *PRISMS – a high school physics curriculum*. American Association of Physics Teachers Winter Meeting, Chicago, IL.
- Morgan, J., & Escalada, L.T. (February, 2009). *Impact of the PRISST Program on Teacher and Student Learning*. American Association of Physics Teachers Winter Meeting, Chicago, IL.
- Escalada, L.T., Harding, M., & Chancey, C. (October, 2008). *Nanoscience workshop for teachers*. Iowa Science Teaching Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Escalada, L.T. (October, 2008). *UNI Physics & Science Education Outreach Instructional Technology Program*. Iowa Science Teaching Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Escalada, L.T., Gilchrist, A., Zan, B., DeVries, R., Sales, C., Uhlenberg, J. (October, 2008). *Ramps and Pathways: A constructivist approach to teaching physical science*. Iowa Science Teaching Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Escalada, L.T. (February, 2008). *Physics Resources and Instruction for Secondary Science Teachers (PRISST)-A Professional Development Program for Out-of-field High School Physics Teachers*. U.S. Department of Education Mathematics and Science Partnerships Program Regional Conference, San Francisco, CA.
- Escalada, L. T., & Moeller, J. (October, 2005). *The challenges of designing and implementing effective professional development for out-of-field high school physics teachers* poster presentation. North Central – Association for Science Teacher Education Fall Conference, Cedar Falls, IA.
- Unruh, R., & Escalada, L. T. (October, 2005). *Learning about waves and electricity via PRISMS PLUS*. Iowa Science Teachers Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Escalada, L. T., Mader, J., Unruh, R., & Vining, T. (August, 2005). *Adding a Plus to PRISMS*. American Association of Physics Teachers National Meeting, University of Utah, Salt Lake City, UT.
- Escalada, L. T. (August, 2004). *The UNI Model for Secondary Science Teaching Programs*. 129th American Association of Physics Teachers National Meeting, Sacramento, CA.
- Escalada, L. T., Moeller, J., & Conley, A. (April, 2004). *UNI Physics Institute – A Professional Development Program for Out of Area High School Physics Teachers*. Iowa Academy of Science 2004 Annual Meeting, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T., Vining, T., & Unruh, R. D. (April, 2004). *PRISMS with Added Enhancements*. National Science Teachers Association National Meeting, Atlanta, GA.
- Unruh, R. D., & Escalada, L. T. (January, 2004). *Putting the Plus into PRISMS*. 128<sup>th</sup> American Association of Physics Teachers National Meeting, Miami Beach, FL.

- Conley, A. J., & Escalada, L. T. (October, 2003). *Investigating the effectiveness of the professional development of high school physics teachers on their learning and their students' learning and applying the results to modify innovative physics curriculum*. 14<sup>th</sup> Annual Argonne Symposium for Undergraduates in Science, Engineering, and Mathematics, Argonne National Laboratory.
- Unruh, R. D., & Escalada, L. T. (October, 2003). Adding the Plus to PRISMS. National Science Teachers Association North/Midwestern Regional Convention, Minneapolis, Minnesota.
- Unruh, R. D., & Escalada, L. T. (October, 2003). Adding the Plus to PRISMS. National Science Teachers Association Western Regional Convention, Reno, Nevada.
- Escalada, L. T., & Unruh, R. D. (October, 2003). *Exploring PRISMS PLUS*. Iowa Science Teachers Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Escalada, L. T., & Unruh, R. (August, 2003). *PRISMS PLUS – A Comprehensive Resource for High School Physics Teachers*. 127<sup>th</sup> American Association of Physics Teachers National Meeting, Madison, WI.
- Escalada, L. T., Roth, M., Breitbach, K., & Burns, L. (October, 2002). *UNI Physics Institute – A program for Out of Area High School Physics Teachers*. Iowa Science Teachers Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Escalada, L. T., & Unruh, R. D. (October, 2002). *PRISMS PLUS – A New Comprehensive Resource for High School Physics Teachers*. Iowa Science Teachers Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Escalada, L. T., & Unruh, R. D. (March, 2002). *Enhanced PRISMS-Activities with a Purpose*. National Science Teachers Association National Convention, San Diego, CA.
- Unruh, R. D., & Escalada, L. T. (March, 2002). *Using Model Cars to Study Solar and Electromagnetic Energy*. National Science Teachers National Convention, San Diego, CA.
- Mader, J., Sokolova, A., Unruh, R. D., & Escalada, L. T. (January, 2002). *Enhanced PRISMS: Physics Activities with a Purpose Workshop*. Winter Meeting of the American Association of Physics Teachers, Philadelphia, PA.
- Escalada, L. T., Chtchourova, E., & Sokolova, A. (October, 2001). *Enhanced PRISMS: A New Comprehensive High School Physics Curriculum for the 21<sup>st</sup> Century*. Iowa Science Teachers Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Escalada, L. T., Unruh, R. D., Taylor, N., & Chtchourova, E. (July, 2001). *Enhanced PRISMS: Physics Activities With a Purpose Workshop*. Summer Meeting of the American Association of Physics Teachers, Rochester, NY.
- Escalada, L. T. (July, 2001). *An investigation on the impact of implementing Visual Quantum Mechanics on student learning and student instructor beliefs*. Annual meeting of the National Physics Education Research Conference, Rochester, NY.
- Escalada, L. T., Unruh, R. D., & Sokolova, A. (January, 2001). *Enhanced PRISMS: Physics Activities with a Purpose Workshop*. Winter Meeting of the American Association of Physics Teachers- Joint with AAS, San Diego, CA.
- Escalada, L. T., & Unruh, R. D. (January, 2001). *A model in preparing high school physics teachers at the University of Northern Iowa*. Winter Meeting of the American Association of Physics Teachers- Joint With AAS, San Diego, CA.
- Unruh, R. D., & Escalada, L. T. (January, 2001). *PRISMS: A professional development model for high school physics teachers*. Winter Meeting of the American Association of Physics Teachers- Joint with AAS, San Diego, CA.
- Zollman, D., Hogg, K., Chmaranatunge, C., Axmann, W., Poole, D., Bao, L., & Escalada, L., et al. (January, 2001). *Visual Quantum Mechanics: A six year review poster*. Winter Meeting of the American Association of Physics Teachers – Joint with AAS, San Diego, CA.
- Escalada, L. T., Unruh, R. D., Sokolova, A., Johnson, N., & Vastro, A. (October, 2000). *Enhanced PRISMS-Activities with a Purpose*. Iowa Science Teachers Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Unruh, R. D. & Escalada, L. T. (August, 2000). *PRISMS: Physics activities with a purpose*. Summer Meeting of The American Association of Physics Teachers, University of Guelph, Guelph, Ontario, Canada.
- Unruh, R. D., Escalada, L. T., & Denissova, K. D. (January, 2000). *PRISMS: Physics activities with a purpose*. Winter Meeting of the American Association of Physics Teachers, Kissimmee, FL.
- Escalada, L. T. (August, 1999). *The impact of activity-based modern physics instruction & implementation on teacher instruction and student understanding*. Summer Meeting of the American Association of Physics Teachers, Trinity University, San Antonio, TX.

- Escalada, L. T.** (March, 1999). *How the use of technology in the science classroom can spark the universal success for all students*. National Science Teacher's Association National Convention, Boston, MA.
- Escalada, L. T., & Zollman, D. A.** (March, 1999). *Investigation on the applicability of activity-based modern physics instruction*. Annual meeting of the National Association for Research in Science Teaching, Boston, MA.
- Escalada, L. T.** (October & September, 1998). *Physical Science for the Elementary Classroom: Investigations in Light*. Science Content and Methods in the Elementary Classroom: An Integrated and Activity Learning Approach Workshop for Chilean Teachers, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T., & Harding, M.** (October, 1998). *Investigating Luminescence: The Cool Way to Learn Science*. Iowa Science Teachers Section of the Iowa Academy of Science Fall Conference, Des Moines, IA.
- Escalada, L. T.** (August, 1998). *Activity-based Modern Physics Instruction and Implementation project*. Summer Meeting of the American Association of Physics Teachers, University of Nebraska-Lincoln, Lincoln, NE.
- Escalada, L. T.** (July, 1998). *Diversity, Equity, and Instructional Technologies*. Science and Mathematics: Implementation and Leadership in Educational Standards Summer Institute, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T.** (June, 1998). *Activity-based Modern Physics Instruction*. Activity-based Modern Physics Instruction and Implementation Summer Workshop, University of Northern Iowa, Cedar Falls, IA.
- Escalada, L. T.** (April, 1998). *Activity-based Modern Physics Instruction & Implementation*. Spring Meeting of the Iowa Section of the American Association of Physics Teachers, North Iowa Community College, Mason City, IA.
- Escalada, L. T., Rebello, N. S., & Zollman, D. A.** (January, 1998). *A new look to Solids & Light*. Winter meeting of the American Association of Physics Teachers, New Orleans, LA.
- Escalada, L. T., Rebello, N. S., & Zollman, D. A.** (August, 1997). *The applicability of Visual Quantum Mechanics in high school physics*. Summer meeting of the American Association of Physics Teachers, University of Denver, Denver, CO.
- Escalada, L. T., Rebello, N. S., & Zollman, D. A.** (August, 1997). *Hands-on quantum mechanics*. Workshop at the Summer Meeting of the American Association of Physics Teachers, University of Denver, Denver, CO.
- Escalada, L. T.** (August, 1997). *Investigating the applicability of activity-based quantum mechanics in a few high school physics classrooms*. Poster at the Summer meeting of the American Association of Physics Teachers, University of Denver, Denver, CO.
- Baptiste, Jr., H. P., **Escalada, L. T.**, & Key, S. G. (April, 1997). *Technology + Science Instruction = A multicultural perspective*. National Science Teacher's Association National Convention, New Orleans, LA.
- Escalada, L. T., Rebello, N. S., & Lang, C.** (April, 1997). *Visual Quantum Mechanics*. Workshop at the National Science Teachers Association National Convention, New Orleans, LA.
- Rebello, N. S., **Escalada, L. T.**, & Lang, C. (April, 1997). *Visual Quantum Mechanics*. Exhibit at the National Science Teachers Association National Convention, New Orleans, LA.
- Escalada, L. T., Rebello, N. S., Gruner, G., & Zollman, D. A.** (March, 1997). *Solids & Light: An instructional unit that introduces quantum principles by using light emitting diodes*. Annual meeting of the National Association for Research in Science Teaching, Oak Brook, IL.
- Escalada, L. T., Rebello, N. S., & Zollman, D. A.** (January, 1997). *Luminescence: It's Cool Light! An instructional unit on luminescent materials and devices*. Winter Meeting of the American Association of Physics Teachers, Phoenix, AZ.
- Zollman, D. A., Rebello, N. S., **Escalada, L. T.**, & Gruner, H. M. (January, 1997). *Hands-on quantum mechanics*. Workshop at the Winter Meeting of the American Association of Physics Teachers, Phoenix, AZ.
- Escalada, L. T., Rebello, N. S., & Zollman, D. A.** (August, 1996). *Solids & Light: An instructional unit on the quantum effects in LEDs*. Summer Meeting of the American Association of Physics Teachers, University of Maryland at College Park, MD.
- Zollman, D. A., **Escalada, L. T.**, Gruner, H. M., & Rebello, N. S. (August, 1996). *Hands-on quantum mechanics*. Workshop at the Summer Meeting of the American Association of Physics Teachers, University of Maryland at College Park, MD.



- Kansas State Physics Education Research Group. (August, 1996). *Visual Quantum Mechanics*. Exhibit at the Summer Meeting of the American Association of Physics Teachers at the University of Maryland at College Park, MD.
- Escalada, L. T.** (June, 1996). *Visual Quantum Mechanics*. Advanced Placement Physics Reading at Trinity College at San Antonio, TX.
- Escalada, L. T.** & Zollman, D. A. (April, 1996). *An investigation on the effects of using interactive digital video in a physics classroom on student learning and attitudes*. Annual meeting of the National Association for Research in Science Teaching, St. Louis, MO.
- Escalada, L. T.**, Rebello, N. S., & Zollman, D. A. (April, 1996). *Teaching Quantum Science with Hands-On Activities*. Workshop at the Annual Meeting of the Kansas Association of Teachers of Science, Rock Springs, KS.
- Bolick, M., & **Escalada, L. T.** (March, 1996). *Actively incorporating standards into the science classroom*. Workshop at the National Science Teachers Association National Convention, St. Louis, MO.
- Escalada, L. T.**, Rebello, N. S., & Zollman, D. A. (January, 1996). *Learning quantum mechanics by using LEDs and solar cells*. Winter Meeting of the American Association of Physics Teachers, Reno, NV.
- Zollman, D. A. & **Escalada, L.T.** (August, 1995). *Visual Quantum Mechanics*. Workshop at the Summer Meeting of the American Association of Physics Teachers, Gonzaga University, Spokane, WA.
- Rebello, N. S, **Escalada, L. T.**, & Zollman, D. A. (January, 1996). *Hands-on activities for teaching Visual Quantum Mechanics*. Workshop at the Winter Meeting of the American Association of Physics Teachers, Reno, NV.
- Escalada, L. T.** & Zollman, D. A. (August, 1995). *Effects of using interactive digital video on student learning and attitudes*. Summer Meeting of the American Association of Physics Teachers, Gonzaga University, Spokane, WA.
- Escalada, L. T.**, Grabhorn, R. P., & Zollman, D. A. (October, 1994). *Applications of interactive digital video in the physics classroom*. Fall Meeting of the Arkansas, Oklahoma, and Kansas Section of the American Association of Physics Teachers, Pittsburg, KS.
- Escalada, L. T.** (April, 1992). *Genetics Education Network and Enhancement program applications in a physics classroom*. Annual Meeting of the Kansas Association of Teachers of Science, Rock Springs, KS.