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PROFESSIONAL HISTORY

Washington University in St. Louis

Administrative Positions

Executive Director, The Teaching Center	2012-present
Co-Director, WU Center for Integrative Research in Cognition, Learning, & Education (CIRCLE)	2011-present
Director, The Teaching Center	2002-2012
Associate Director, The Teaching Center	2001-2002
Assistant Dean, The College of Arts & Sciences	1999-2002

Academic Positions

Florence E. Moog Professor of STEM Education	2012-present
Associate Professor, Chemistry	2012-present
Adjunct Associate Professor of Physics (courtesy)	2012-present
Associate Professor of Biology (courtesy)	2012-present
Professor of the Practice in Chemistry	2010-2012
Senior Lecturer in Chemistry	2000-2010
Lecturer in Chemistry	1994-2000

Corporate Positions

Biosym Technologies, Inc.	
Applications Support Scientist	1992-1994
IBM Corporation	
Scientific Support Specialist, Computational Chemistry	1989-1992

EDUCATION AND TRAINING

Postdoctoral Fellow, Indiana University, Bloomington, IN Advisor: Ernest R. Davidson	1986-1988
Ph.D., physical chemistry, University of Utah, Salt Lake City, UT Advisor: Jack Simons	1982-1986
B.S., *summa cum laude*, chemistry and mathematics Clarion State University, Clarion, PA	1982

CURRENT ADMINISTRATIVE POSITIONS

Executive Director of The Teaching Center (teachingcenter.wustl.edu/)

- Oversees all operations, budgets, and staff; manages 1 administrative staff person, 6 technical-staff members, 4 Ph.D. staff members, two postdoctoral fellows, and 1 M.A. staff member
- Works with faculty in all schools and colleges at Washington University
- Oversees the development, implementation, and evaluation of the Teaching Center professional-development programs for faculty and graduate students
- Oversees the development and implementation of the Teaching Center "scholarship of teaching and learning" programs, established in 2002
    - Oversees the writing and management of The Teaching Center grants
- Develops and maintains close collaborations with academic departments and other academic centers at the University
- Member of the University Assessment Committee, which oversees all assessment activities throughout the University
- Oversees Washington University classrooms
    - Chair of Classroom Monitoring Committee (CMC) – a committee of representatives from Arts & Sciences, the School of Engineering, Financial Planning, Facilities Management, Office of Student Records, and Event Services. The CMC is an advisory group that determines the current and future needs of the classrooms, including effective Washington University classroom usage and renovation needs.
    - Works closely with the Associate Vice Chancellor of Finance to help determine current and future financial resources needed for Washington University classrooms
    - Supervises and leads the Teaching Center staff in managing the Washington University classrooms; Leads the Teaching Center staff in designing the classrooms and working with Facilities Management during the renovation or building of the classrooms. Leads the Teaching Center staff in designing the classroom multimedia systems.
    - Supervises the Teaching Center staff in providing technical support for faculty teaching in classrooms
- Scholarship of Teaching and Learning (see details in later cv section)
    - Writes grants for SoTL
    - Publishes in faculty-development and discipline-education journals
    - Conducts collaborative studies with faculty

Co-Director of WU Center for Integrative Research in Cognition, Learning, & Education (CIRCLE) (circle.wustl.edu/)

- Consults with faculty in all schools at Washington University to develop collaborative projects that develop, implement, and evaluate innovations in teaching using classroom-based evaluations
- Oversees all operations, budgets, and staff; manages 1 administrative staff person, 2 Ph.D. research scientists, 1 M.S. statistician, two postdoctoral fellows, and 1 M.A. staff member
- Writes and manages grants for funding for collaborative projects
- Disseminates results of the collaborative projects in the discipline-education fields

TEACHING

Current Teaching Responsibilities

- Teaches General Chemistry lecture course on a regular basis; one of a small group of instructors
- Team leader of General Chemistry teaching group that consists of two General Chemistry lecturers and a Ph.D. program coordinator for General Chemistry supplemental programs. (This group does not include the tenure-track faculty teaching in the General Chemistry course.)
- Develops, implements, and evaluates new curricula and pedagogy programs to improve General Chemistry lecture and laboratory courses
- Co-teaches and developed the leadership-training course for PLTL leaders, which is taught every fall
- Co-teaches and co-developed a year-long *Women in Science* Focus course, which is taught every other year
- Co-teaches and developed an *Introduction to Scholarship of Teaching and Learning (SoTL)* graduate course, which is now taught every semester

Courses Taught

- *General Chemistry 111A and 112A*; fall and spring on a regular basis from 1994-2001, then fall only since 2002
- *Women in Science* first-year focus course; biennial course, co-developed and co-teaches with Barbara Baumgartner, senior lecturer in Women, Gender, and Sexuality Studies; every other year starting in 2006-2007
- *Seminar on Academic Mentoring*, developed leadership-training course for PLTL leaders; co-teaches every fall since 2003
- *Introduction to Scholarship of Teaching and Learning (SoTL)*; co-developed and co-teaches graduate course every spring 2013 and 2014, every semester starting 2015
- *Practical Applications of Academic Mentoring*; co-developed and co-taught peer-leader course in Chemistry; starting in 2003-2004 through 2011-2012
- *Preparatory Chemistry Course* (Chem 114); for incoming first-year students; developed and taught summers 1997-2002

- *Washington University MCAT Review course*; developed and managed course, and taught the physical-sciences (General Chemistry and General Physics); 1998-2002

ADVISING AND MENTORING

- 4-year academic advisor, since 1994; chemistry major advisor, since 2012
- Mentors peer leaders and peer mentors since 2002 – approximately 100 undergraduate students yearly
- Mentors current graduate students in research internships to implement and evaluate innovations in the classroom; internship program started in 2012 – approximately 10 graduate students since 2012
- Mentors postdoctoral fellows, recent B.A. graduates, and current undergraduate students in research projects concerning pedagogy
- Developed, obtains funding, and implements a STEM workshop series for ninth-grade girls since spring 2011, which uses a tiered mentoring program comprising female graduate students and female undergraduates (teachingcenter.wustl.edu/scholarship/women-in-stem/)

RESEARCH/SCHOLARSHIP OF TEACHING AND LEARNING
(teachingcenter.wustl.edu/scholarship/)
Develops new pedagogical methods, including those that utilize collaborative learning and active learning. Leads and provides resources to the teams that are working on these projects, while collaborating with faculty in the discipline when appropriate. Currently the scholarship projects focus on one of three broad areas: improving learning in introductory STEM courses, promoting faculty development in the scholarship on teaching and learning, and teaching with technology.

Introductory Learning in STEM (Science, Technology, Engineering, and Mathematics)

- **Peer-Led, Team Learning (PLTL) Group**
  (teachingcenter.wustl.edu/scholarship/pltl/)
  Main architect of the Peer-Led Team Learning program for General Chemistry at Washington University, with expansion to the Calculus series and a modified program in the School of Engineering and Applied Science. Developed a multi-disciplinary general-studies course required for first-time peer leaders to learn facilitation and group-management skills. Paper on evaluation published in *J. Chem. Edu.*

  Studying the discourse in collaboration with K. Sawyer (Education, now at University of North Carolina) and M. Hogrebe (Education). Study on the discourse that occurs in PLTL groups; results are being used to modify the training of peer leaders. Two chapters in a book *Productive Multivocality in the Analysis of Group Interactions*,

edited by D. Suthers and K. Lund. A manuscript on this quantitative discourse project was submitted to *Chem. Edu. Res. and Prac.*, August, 2015.

In summer 2014, started collaboration with M. Repice (Teaching Center) and G. Szteinberg (lecturer, Chemistry) examining the discourse in General Chemistry peer-leader essays. Examining over 10 years of essays to identify peer-leading best practices as told by peer leaders. A manuscript is in preparation.

- **The Transition Program for General Chemistry**
(teachingcenter.wustl.edu/scholarship/transition-program/)
Leads the development of a transition program for students who are under-prepared for General Chemistry. This program includes the development of an online pre-matriculation tutorial and diagnostic exam to identify the less-prepared students. The program also includes extended-length POGIL recitations focused on problem solving, integration into PLTL groups, and specialized semi-structured peer-mentored homework groups. The evaluation shows improved performance by students in this program; one *J. Chem. Edu.* paper was published, and was selected as one of three finalists for the 5th annual Maryellen Weimer Scholarly Work on Teaching and Learning Award (spring 2013). The award, created to recognize outstanding scholarly work on teaching and learning, was announced at the 2013 Teaching Professor Conference held May 31-June 2 in New Orleans.

  Collaborating with M. Hogrebe (Department of Education), conducting a long-term study of the effect of the transition program on under-prepared students on retention in STEM and the effect on performance in upper-level STEM courses. This project is being funded by the Howard Hughes Medical Institute (HHMI). A manuscript was submitted to *J. Chem. Edu.*, March, 2015.

- **Determining Concept-building Approaches (Learning Approaches) of General Chemistry Students (chemistry and psychology)**
(teachingcenter.wustl.edu/scholarship/learning-approaches/)
Starting in fall 2009, collaborating with M. McDaniel (Professor of Psychology) to determine the concept-building approaches of students in General Chemistry using a function-learning task that is independent of chemistry knowledge, and compare course performance between two learning groups (algorithmic/rote and theory-based/rule-based). Interventions will then be introduced to help the lower performing group succeed in General Chemistry.

  Expansion of the project to a seven-university consortium with Washington University as the lead university; funded for 4 years by the LUCE foundation starting in 2012. Continuation of the consortium and dissemination is partially funded for 2 years by the Teagle Foundation starting in 2014.

- **POGIL Recitation Classes in General Chemistry and Help Sessions in Organic Chemistry**
  Since 2008, collaborating with M. Daschbach and J. Luo (lecturers in Chemistry), the implementation and evaluation of more group-oriented recitation classes in General Chemistry by modifying a nationally known active-learning method POGIL. We are evaluating the effectiveness of these recitations compared to traditional recitations in terms of student performance.

  In fall 2010, collaborated with Organic Chemistry faculty members to implement voluntary POGIL help sessions, train the POGIL facilitators (graduate students and postdoctoral teaching fellows), and assist in the development of the material for Organic Chemistry.

- **Interdisciplinary Applications for General Chemistry Laboratory** (teachingcenter.wustl.edu/scholarship/interdisciplinary-applications/)
  Developed interdisciplinary, application-oriented tutorials for General Chemistry; the project ran from 1998 – 2002; tutorials are still integrated into the General Chemistry laboratory curriculum and are updated every few years. Three papers in *J. Chem. Edu.* have been published from this project.

Promoting Faculty Development in the Scholarship on Teaching and Learning

- **Association of American Universities (AAU) Project Site** (*teachingcenter.wustl.edu/scholarship/improving-stem-education/*)
  "Using a Multiple-Strategies Approach to Increase the Use of Active-learning Techniques across Multiple STEM Disciplines: Implementation and Evaluation," is a project that is funded by the AAU Undergraduate STEM Education Initiative starting in July 2013. Co-PI with M. McDaniel (psychology), K. Miller (biology), and K. Thoroughman (Biomedical Engineering). This project focuses on incorporating and evaluating effective active-learning techniques in STEM courses in Arts & Sciences and Engineering. This project also focuses on designing and implementing a professional-development program in active-learning techniques and practices for faculty and graduate students, with a long-term commitment via faculty fellows and a Summer Institute for Teaching. The campus also will promote cultural change by creating a faculty teaching community that integrates and values research and teaching.

- **WU Center for Integrative Research in Cognition, Learning, and Education (CIRCLE) (circle.wustl.edu/)**
  Co-Director of the Center with M. McDaniel (psychology). The center is funded by the Office of the Provost and opened July 2011. CIRCLE is focused on research concerning teaching and learning. The mission of CIRCLE is to improve teaching and

student learning at Washington University and in higher education more broadly by providing a bridge between faculty teaching in the disciplines and researchers in cognitive and learning sciences and discipline-based education research. Through collaborative projects, the goals of CIRCLE are to 1) foster implementation of innovations in teaching across the university, which include those that apply research from the cognitive and learning sciences and discipline-based education science; 2) support research to evaluate the effectiveness of these innovations for enhancing student learning and retention of knowledge; 3) and disseminate the results of these classroom-based evaluations using experimental methods to the Washington University community and to the national and international communities. The Center is also funded by external grants. Manuscript about the center in *To Improve the Academy*, 2013.

- **Center for the Integration of Research, Teaching, and Learning (CIRTL)** (https://teachingcenter.wustl.edu/programs/graduate-students-postdocs/professional-development/wu-cirtl/)
  This is a nation-wide network of 25 universities whose focus is to improve professional-development programs on teaching and learning for future STEM faculty. Administrative co-leader of the WU-CIRTL program; institutional leader is K. Miller (chair of biology). Our WU-CIRTL program started in 2012; we are collaborating with faculty at Washington University to refine and enhance our WU-CIRTL program including initiating a scholarship of teaching and learning internship (WU-STAR) for Washington University STEM graduate students. Currently, we are evaluating the effectiveness of our WU-CIRTL program on future faculty's awareness of, likeliness to use, and knowledge of evidence-based STEM pedagogies. A manuscript on the evaluation of the STEM Pedagogy workshop series is in preparation. Components of this project are funded through external grants.

- **STEM Education Research Group (ERG)** (teachingcenter.wustl.edu/programs/faculty/communities-of-practice/stem-erg/)
  Started in fall 2008, one of three founding members of a learning community consisting of faculty and instructional staff who meet weekly to discuss their pedagogical scholarship on student learning in STEM. The group includes members from the departments of biology, chemistry, education, engineering, mathematics, physics, and psychology, as well as Science Outreach (K-12 science and math education). Article published in *To Improve the Academy.*

Teaching with Technology (Digital Pedagogy)

- **Using Wireless Tablet PCs to Increase Active Learning (chemistry and biology)** (teachingcenter.wustl.edu/scholarship/flexible-technology/)
  Since 2005, collaborating with faculty members in chemistry and biology to integrate more active learning into their courses using tablet PCs. Provides pedagogy and

technical expertise. Wrote the grants that obtained the tablet PCs for this project. Article published in *To Improve the Academy.*

- **Designing Active-learning Classrooms to Lower Barriers in implementing active-learning techniques in the classroom (chemistry and biology)** (news.wustl.edu/news/Pages/26254.aspx)
  In 2012, collaborated with Facilities Management and the School of Arts & Sciences to design and build a robust active-learning classroom to pilot the use of collaborative and active-learning techniques in the classroom. Since 2012, collaborating with faculty members in chemistry and biology to integrate more collaborative-learning activities into their courses using tablet PCs. Provides pedagogy and technical expertise. Funded by the Annual Fund at Washington University. Starting fall 2015, ALC added to the classroom pool for general use.

CONSULTING

Pedagogy

- Collaborative Group Pedagogy:
  - PLTL; develops institutional plans and trains leaders: UT Dallas (2008), Johns Hopkins (2008, 2009), Carleton College (2009), Colgate University (2009), California State University Channel Islands (2012)
  - POGIL and collaborative group pedagogy; consults with faculty on implementing POGIL and other collaborative group pedagogy in large classes: SUNY Cobleskill (2014-2015), University of California – Davis (2014-2015)
  - In-class group work; developed course implementation and trained instructor: Brooklyn College (2010)
- Teaching Workshops: University of Mississippi (2012), University of Oklahoma (2012), Lewis and Clark College (2011), and BAM Educational Institute (2004)
- Primary-school curriculum development: The St. Michael School (2001-2003) and Central Institute for the Deaf (2007, 2008)

Textbook and Course Material

- General Chemistry textbook reviews and problem development (1995 – present)
- Advisory board member for W.H. Freeman General Chemistry online program (2008-2010)
- General-Chemistry course improvement: Nicholls State University (2008)

Teaching Center and Classroom Design

- Teaching Center Design: Colgate University (2009), and Independence Community College (2011)
- Classroom Design: Gettysburg College (2005, 2012)

AWARDS

Emerson Excellence in Teaching award (2013)
Arts & Sciences Dean's Award, Washington University (2005)

Freshman Favorite Award, Washington University (2002)
One Hundred Percent Club, IBM (1991)
Technical Computing Systems Department Award, IBM (1989, 1990, 1991)

SERVICE

Department of Chemistry (selected)

Assessment Committee (2012 – present); established in 2012
Chemistry Diversity & Inclusion Task Force (2015-present)
General Chemistry 111 Instructor Committee (2006 – present); established in 2006
Laboratory Oversight Committee (2005 – present); established in 2005
Undergraduate Work Committee (2003 – present)
Web site Committee (1994-2002; 2009-present)
Research Computing Committee (1994 – present)

University (selected)

Assessment

University Assessment Committee (2010 – present)
Numeracy Assessment Subcommittee (2012-present); chair
Subcommittee (Criterion Four) for 2014 University Accreditation (2012-2014); co-chair
Subcommittee (Criterion Three) for 2014 University Accreditation (2012-2014)

STEM Teaching and Learning

Coordinating Committee on Introductory Courses in Biology and Chemistry (2014 – present)
University Committee on STEM Data Collection (2014 – present)
HHMI Advisory Committee for Washington University (1994 – present)
Education of Undergraduates in the Life Sciences Committee (2009 – 2012)
Committee on the Retention of Women in STEM (2009-2012)
Cornerstone Sloan Grant (2007 – 2009); WU Representative

Undergraduate Students

Standing Committee on Facilitating Inclusive Classrooms (SCFIC) (2015 – present)
Committee to Review Cornerstone: The Center for Advanced Learning (2012-2013) – student learning center
Goldwater Scholarship WU Selection Committee (2002 – present); chair
Undergraduate Council (2002 – present)
Chancellor's Committee on University Policy and Practice Affecting Students with Disabilities (2004 – present)
WUSTL Trio Advisory Board (2004 – present)
Academic Integrity Committee (2010 – present)

Classroom Planning

Classroom Monitoring Committee (2002 – present); chair
Classroom Strategic Planning Committee (2010 – present); established 2010

Classroom Tools for Teaching

IT Goverance Teaching and Learning Committee (2014-present); established in 2014

Steering Committee for Blackboard Implementation (2011-2014)

Committee for Selection of WUSTL Learning Management System (2010-2012)

Committee for the Evaluation of Blackboard (2014)

Discipline (selected)

Symposium/Conference Organizer

Co-Chair of Central Corridor Regional POGIL Conference, summer 2016

Co-organizer of WUSTL CIRCLE conference: *Disseminating Results from the AAU STEM Initiative*, Washington University in St. Louis, MO, October 2015

Co-organizer of WUSTL CIRCLE conferences, *Integrating Cognitive Science with Innovative Teaching in STEM Disciplines*, Washington University in St. Louis, MO, September 2014 and September 2012

Organizer of 2014 BCCE Symposium (5 sessions): *Student-Centered Learning with a Focus on Improving Process Skills in the Classroom and Laboratory*, 2014 Biennial Conference on Chemical Education, August 3-7, 2014, Grand Valley State University

Co-organizer of CIRTL Fall Networking Meeting, Washington University, St. Louis, MO, September 10-11, 2013

Co-chair of South Central Regional POGIL Conference, 2012

National Pedagogy Service

POGIL Project Steering Committee, 2013-present

POGIL Project, Project Assessment Coordinator, 2014 - present

POGIL Project, National Feedback Coordinator for POGIL materials, 2013-2014

National POGIL facilitator for national and regional POGIL training workshops, January 2011 – present

Administrative co-leader of the WU-CIRTL program for the CIRTL Network, 2012 - present

Board member of the PLTL International Society, 2012-2014

Reviewer

Reviewer for *Journal of Chemical Education*

Reviewer for NSF Panel for CHE REU site proposals, 2011

Reviewer for Department of Chemistry program review at University of San Francisco, April 18-20, 2012

EDUCATION PUBLICATIONS (*corresponding authors)

M. J. Cahill*****, M. A. McDaniel, R. F. Frey, K. M. Hynes, M. D. Repice, J. Zhao, and R. Trousil, *Phys. Rev. Special Topics – Phys. Edu. Res.* "Understanding the Relationships Between Student Attitudes and Student Learning." (submitted 08/10/2015)

M. D. Repice, R. Keith Sawyer, Mark C. Hogrebe, Patrick J. Brown, Sarah B. Luesse, Daniel J. Gealy, and Regina F. Frey*, *Chem. Edu. Res. and Prac.* "Talking Through the Problems: A Study of Discourse in Peer-Led Small Groups." (submitted 08/09/2015)

B. A. Fisher, E. D. Solomon, D. A. Leonard, J. M. Mutambuki, C. A. Cohen, J. Luo, S. Pondugula, and R. F. Frey*, *J. Col. Sci. Teaching*. "A Visual Approach to Helping Instructors Integrate, Document, and Refine Active Learning." (submitted 05/27/2015)

D. A. Leonard, M. C. Hogrebe, and R. F. Frey*, *J. Chem. Edu.* "Longitudinal Study of a Transition Program for Under-prepared Students in General Chemistry." (submitted 03/02/2015)

B. A. Fisher* and R. F. Frey*, *National Teaching and Learning Forum.* **24**, 4-6 (2015). "Using Documentary Tools to Foster the Practice of Scholarly Teaching." (invited submission) Doi: 10.1002/ntif.30016

B. A. Fisher*, C. L. Dufault, D. A. Leonard, M. D. Repice, and R. F. Frey*, *To Improve the Academy*. 33, no. 2 (2014): 175-195. "Developing Scholarly Teachers through a SoTL Faculty Fellowship." doi: 10.1002/tia2.20011

Co-editor of: McDaniel, M., Frey, R., Fitzpatrick, S., & Roediger, H.L. (Eds.) (2014). *Integrating Cognitive Science with Innovative Teaching in STEM Disciplines.* [e-reader version] doi: 10.7936/K75Q4T1X

R. F. Frey* and S. M. Fitzpatrick (2014). "The benefits of cross-talk: Cognitive psychologists and STEM educators from multiple disciplines can enrich their research and enhance STEM education through shared knowledge." In M. McDaniel, R. Frey, S. Fitzpatrick, & H.L. Roediger (Eds), *Integrating cognitive science with innovative teaching in STEM disciplines* [E-reader version]. doi: http://dx.doi.org/10.7936/K7BG2KWM

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K. Sawyer*, R. Frey, and P. Brown, *Productive Multivocality in the Analysis of Group Interactions*, Computer-Supported Collaborative Learning Series, Vol. 15; D. D. Suthers, K. Lund, C. P. Rose, C. Teplovs, and N. Law, eds.; Springer Science + Business Media B.V.: New York, 2013, 191-204. "Knowledge Building Discourse in Peer-Led Team Learning (PLTL) Groups in First-year General Chemistry."

K. Sawyer*, R. Frey, and P. Brown, *Productive Multivocality in the Analysis of Group Interactions*, Computer-Supported Collaborative Learning Series, Vol. 15; D. D. Suthers, K. Lund, C. P. Rose, C. Teplovs, and N. Law, eds.; Springer Science + Business Media B.V.: New York, 2013, 183-189. "Peer-Led Team Learning in General Chemistry."

B. A. Fisher*, C. L. Dufault, M. D. Repice, and R. F. Frey*, *To Improve the Academy*, J. E. Groccia, ed. and L. Cruz, assoc. ed. (Jossey-Bass, Vol. 32, 2013), p. 39. "Fostering a 'Growth Mindset': Integrating Research on Teaching and Learning and the Practice of Teaching."

B. A. Fisher*, K. G. Miller, W. E. Buhro, D. J. Frank, and R. F. Frey*, *To Improve the Academy*¸ J. E. Groccia, ed. and L. Cruz, assoc. ed. (Jossey-Bass, Vol. 31, 2012), p. 329. "Collaborating with Faculty to Design Active Learning with Flexible Technology."

S. P. Shields, M. Hogrebe, W. Spees, L. Handlin, G. Noelken, J. Riley, and R. F. Frey*, *J. Chem. Edu.*, **89**, 995, 2012. "A Transition Program for Underprepared Students in General Chemistry: Diagnosis, Implementation, and Evaluation."

B. A. Fisher* and R. F. Frey*, *To Improve the Academy*¸ J. E. Miller and J. E. Groccia, ed. (Jossey-Bass, Vol. 30, 2011), p. 99. "Adapting a laboratory-group model to foster the scholarship of teaching and learning."

R. E. Davis, R. Frey, M. Sarquis, and J. L. Sarquis. *Modern Chemistry*. Austin: Holt, Rinehart, and Wilson (2006, 2009). *High-school textbook*

S. C. Hockings, K. J. DeAngelis, and R. F. Frey*, *J. Chem. Edu.*, **85**, 990, 2008. "Peer-Led Team Learning in General Chemistry: Implementation and Evaluation."

C. Herman, R. E. Casiday, R. K. Deppe, M. Gilbertson, W. M. Spees, D. Holten, and R. F. Frey*, *J. Chem. Edu.*, **82**, 1871, 2005. "Interdisciplinary, Application-Oriented Tutorials: Design, Implementation, and Evaluation."

R. Frey*, S. Hockings, L. Kuehne, and J. Woods, *Progressions: Peer-Led Team Learning,* Fall 2004, vol. 6 (1), 3-4. "Peer Leader Training at Washington University."

R.E. Casiday, D. Holten, and R.F. Frey*, *J. Chem. Edu.,* **78**, 1210, 2001. "Blood-Chemistry Tutorials: Teaching Biological Applications of General-Chemistry Material."

M.J. Donlin, R. F. Frey*, C. Putnam, J. Proctor, and J. K. Bashkin*, *J. Chem. Edu.*, **75**, 437, 1998. "Analysis of Iron in Ferritin, the Iron-storage Protein: A General Chemistry Experiment."

ADDITIONAL PUBLICATIONS

R. F. Frey and E. R. Davidson, *Advances in Molecular Electronic Structure Theory*, T. Dunning ed. (JAI Press Inc., Vol. 1, 1990), p. 213. "The Von Neumann-Wigner and Jahn-Teller Theorems and their Consequences." *Review article*

R. F. Frey and E. R. Davidson, *J. Chem. Phys.*, **106**, 2331, 1997. "Density Functional Calculations for Mg_n^+ Clusters."

X.W. Fan, X.J. Chen, S.J. Zhou, Y. Zheng, C.E. Brion, R. Frey, and E.R. Davidson, *Chem Phys. Lett.*, **276**, 346, 1997. "Imaging of the Outer Valence Orbitals of CO by Electron Momentum Spectroscopy – Comparison with High Level MRSD-CI and DFT Calculations."

L. Schafer, I.S. Bin Drees, R.F. Frey, C. Van Alsenoy, and J.D. Ewbank, *J. Mol. Struc. (Theochem)*, **338**, 71, 1995. "Molecular Orbital Constrained Gas Electron Diffraction Study of N-acetyl N'-methyl Alanine Amide."

A. Kelterer, M. Ramek, R. F. Frey, M. Cao, and L. Schafer, *J. Mol. Struc. (Theochem)*, **316**, 45, 1994. "Basis Set Influence in ab initio Calculations: The Case of 2-aminoethanol and N-Formylproline Amide."

B. J. Teppen, M. Cao, R. F. Frey, C. van Alsenoy, D. M. Miller, and L. Schafer, *J. Mol. Struc. (Theochem)*, **314**, 169, 1994. "An Investigation into Intramolecular Hydrogen Bonding: Impact of Basis Set and Electron Correlation on the Ab Initio Conformational Analysis of 1,2-Ethanediol and 1,2,3-Propanetriol."

L. B. Knight, Jr., C. B. Cleveland, R. F. Frey, and E. R. Davidson, *J. Chem. Phys.*, **100**, 7867, 1994. "Electron Spin Resonance Investigation of Small Magnesium Cluster Cation Radicals, Mg_N^+, in neon and argon matrices at 4 K: Comparison with *ab initio* calculations."

R. F. Frey, M. Cao, S.Q. Newton, and L. Schafer, *J. Mol. Struc. (Theochem)*, **285**, 99, 1993. "Electron Correlation effects in Aliphatic Non-bonded Interactions: Comparison of n-alkane MP2 and HF Geometries."

F. A. Momany, R. Rome, R. F. Frey, and L. Schafer, *Chemical Design and Automation*, **7**, 1, 1992. "On the use of Results of Correlation Studies in Refining Parameters in Force Fields of Molecular Mechanics."

R. F. Frey, J. Coffin, S. Q. Newton, M. Ramek, V. K. W. Cheng, F. A. Momany, and L. Schafer, *J. Am. Chem. Soc.*, **114**, 5369, 1992. "The Importance of Correlation-Gradient Geometry Optimization for Molecular Conformational Analyses."

M. Ramek, V. K. W. Cheng, R. F. Frey, S. Q. Newton, and L. Schafer, *J. Mol. Struc. (Theochem)*, **235**, 1, 1991. "The Case of Glycine Continued: Some Contradictory SCF results."

S. A. C. Clark, T. J. Reddish, C. E. Brion, E. R. Davidson, and R. F. Frey, *Chem. Phys.*, **143**, 1, 1990. "The Valence Orbital Momentum Distributions and Binding Energy Spectra of Silane: Quantitative Comparison of Electron Momentum Spectroscopy using Hartree-Fock Limit and Correlated Wavefunctions."

S. A. C. Clark, E. Weingold, C. E. Brion, E. R. Davidson, R. F. Frey, C. M. Boyle, W. von Niessen, and J. Schirmer, *Chem. Phys.*, **134**, 229, 1989. "The Valence Orbital Momentum Distributions and Binding Energy Spectra of Methane: Quantitative Comparison of Electron Momentum Spectroscopy using Hartree-Fock Limit and Correlated Wavefunctions."

R. F. Frey and E. R. Davidson, *J. Chem. Phys.*, **90**, 5555, 1989. "Energy Partitioning of the SCF Interaction Energy of ScCO."

R. F. Frey and E. R. Davidson, *J. Chem. Phys.*, **90**, 5541, 1989. "Analysis of the Bond Energy of ScCO."

A. O. Bawagan, C. E. Brion, E. R. Davidson, C. Boyle, and R.F. Frey, *Chem. Phys.*, **128**, 439, 1988. "The Valence Orbital Momentum Distributions and Binding Energy Spectra of H2CO: A Comparison of Electron Momentum Spectroscopy and Quantum Chemical Calculations using Near Hartree-Fock Quality and Correlated Wavefunctions."

R. F. Frey and E. R. Davidson, *J. Chem. Phys.*, **89**, 4227, 1988. "The Jahn-Teller Distortion of SiH_4^+."

R. F. Frey and E. R. Davidson, *The Structure of Small Molecules and Ions*, R. Naaman and Z. Vager, ed. (Plenum, 1988), p. 209. "Topology of the Ground-State Surface of CH_4^+."

R. F. Frey and E. R. Davidson, *J. Chem. Phys.*, **88,** 1775, 1988. "Potential Energy Surfaces of CH_4^+."

R.F. Frey and J. Simons, *J. Phys. Chem.*, **91**, 2818, 1987. "Fragmentation Dynamics of Solvent-Clustered Ion Pairs."

A. Banerjee, A. Quigley, R.F. Frey, D. Johnson, and J. Simons, *J. Am. Chem. Soc.*, **109**, 1038, 1987. "Monte Carlo Simulations of Small Ion-Pair Hydrate Clusters: NO_2^-:$Li^+(H_2O)_n$."

R.F. Frey and J. Simons, *J. Chem. Phys.*, **84**, 4462, 1986. "Resonance State Energies and Lifetimes via Analytic Continuation of Stabilization Graphs."

R. F. Frey, J.O. Jensen, and J. Simons, *J. Phys. Chem.*, **89**, 788, 1985. "Rotational Predissociation of Model Atom-Diatom Complexes."

D.A. Dixon, R.A. Eades, R. Frey, P.G. Gassman, M.L. Hendewerk, M.N. Paddon-Row, and K.N. Houk, *J. Am. Chem. Soc.*, **106**, 3385, 1984. "Theoretical Evaluation of the Effect of Electron-Withdrawing Substituents on Carbocation Stabilities. Delocalization of Charge to the Carbonyl and Cyano Groups."

M.L. Hendewerk, R. Frey, and D.A. Dixon, *J. Phys. Chem.*, **87**, 2026, 1983. "Effect of Substituting Silicon for Carbon on Molecular Proton Affinities."

R.A. Eades, M.L. Hendewerk, R. Frey, D.A. Dixon, and J.L. Gole, *J. Chem. Phys.*, **76**, 3075, 1982. "The Electronic Structure of Alkali trimer Anions and Cations."

OTHER ARTICLES

Weimer, Maryellen, "Peer Led Team Learning," *The Teaching Professor*. April 21, 2009. http://www.teachingprofessor.com/articles/teaching-and-learning/peer-led-team-learning (review of the JCE PLTL paper).

RESEARCH PRESENTATIONS (speakers underlined)

Invited

R. F. Frey: 2015 AAU STEM Network Conference, St. Louis, MO, October 13-14, 2015. "Endowed Chairs in Education."

R. F. Frey: Department, University, and National Models for Faculty Development to Support Adoption of Evidence-Based Teaching Symposium, 249th ACS National Meeting & Exposition, Denver, CO, March 22-26, 2015. "Development of a structured support fellowship for faculty innovation in teaching."

R. F. Frey: 2014 AAU Undergraduate STEM Education Initiative Conference, Washington D.C., July 21-23, 2014. "Teaching and Learning Centers as Partners in Reforming Undergraduate STEM Teaching."

R. F. Frey: 2014 U.S. News STEM Solutions – The National Leadership Conference, April 23-25, 2014. Panelist on "Report from the Teaching Front."

R.F. Frey: The Association of Women in Science, St Louis Chapter, March 1, 2014. “Fixed vs. Growth Mindset: How changing the way you think about your abilities can lead to greater success.” (keynote speaker)

R. F. Frey: Excellence in Teaching & Learning in the Sciences Symposium; Johns Hopkins University, January 14, 2014. Peer Led Team Learning (PLTL): Philosophy, Implementation, and Evaluation." (keynote speaker)

R. F. Frey: iteach Symposium, Washington University, St. Louis;, January 9, 2014. “Applying a Growth Mindset to Teaching” (plenary speaker)

R. F. Frey: Department of Biology, Washington University in St. Louis; March 18, 2013. “Engaging Students with Active and Collaborative Learning in STEM: WU Projects.”

R. F. Frey: University of Mississippi, Oxford MS; September 9, 2012. “Scholarship on Teaching and Learning.”

R.F. Frey: American Chemical Society Midwest-Great Lakes Regional Meeting; "Workshop on Peer-Led Team Learning” **(and moderator of the Chemical Education Session)**; October 19-22, 2011. “Incorporating Peer-Led Team Learning (PLTL) into Lower Level Chemistry Courses: Implementation and Insights"

S. P. Shields and R. F. Frey: 21st Biennial Conference on Chemical Education; "Creating Effective Learning Environments in Large Enrollment Chemistry Courses" Symposium; Denton, TX, August 1-5, 2010. “Program for Underprepared Students in General Chemistry: Implementation and Evaluation.”

M.A. McDaniel, S. P. Shields, C. Kudelka, and R. F. Frey: iteach Symposium, Washington University, St. Louis; January 14, 2010. “Student-Learning Approaches: Predicting Chemistry Course Performance” (plenary speaker)

P. L. Brown, K. Sawyer, and R. F. Frey: Fall 2009 CONFCHEM on "Excellence in Education with CCLI: Notes from Recent Awardees." ACS Online Conference: October 3-8, 2009. "An Analysis of Discourse in Peer-Led Team Learning (PLTL)"

S. C. Hockings, K. J. DeAngelis, and R. F. Frey: Carleton College, Northfield, MN. May 6, 2009. "Peer-Led Team Learning in General Chemistry: Implementation and Evaluation."

S. C. Hockings, K. J. DeAngelis, and R. F. Frey: Missouri University of Science and Technology, Rolla, MO. January 28, 2008. "Peer-Led Team Learning in General Chemistry: Implementation and Evaluation."

C. Herman, R. E. Casiday, R. K. Deppe, M. Gilbertson, D. Holten, and R. F. Frey: ITeach Symposium, Washington University, St. Louis; Plenary Talk, January 3-4, 2002. "Assessing the Impact of Technology on Student Learning: Incorporation of Application-based Tutorials in the General-chemistry Laboratory Curriculum, An Evaluation Study."

R. E. Casiday, D. Holten, R. Krathen, and R.F. Frey: American Chemical Society National Meeting; "Using Real-World Questions and Active Learning to Teach Students How Science is Actually Done" Symposium **(session chair of Biological Themes in General Chemistry section**); April 13-17, 1997. "Using Interdisciplinary Topics in Teaching General Chemistry."

J. R. Bleeke and R. F. Frey: The Electrochemical Society Meeting; "Fullerenes in Undergraduate Chemistry" Symposium; May 14-19, 2000. "Fullerene Science Module for General Chemistry"

R. F. Frey: Washington University Medical School Workshop for Undergraduate Teaching; "Bringing Discoveries to Undergraduate Classrooms" Workshop; June 20-22, 2000. "Web-based Learning: Promises, Practice, and Pitfalls."

R. E. Casiday, D. Holten, and R.F. Frey: 16th Biennial Conference on Chemical Education; "Incorporating Biochemistry into Introductory Chemistry Courses" Symposium; 7/30-8/3, 2000. "Blood-Chemistry Tutorials: Teaching Biological Applications of General-Chemistry Material."

R. F. Frey and E. R. Davidson: Argonne National Laboratory; LeMont, IL. May 23, 1989. "The Analysis of the Bond Energy of ScCO."

R. F. Frey and E. R. Davidson: NASA Ames Research Center; Moffett Field, CA. April 25, 1989. "The Analysis of the Bond Energy of ScCO."

Contributed

B. A. Fisher and R.F. Frey: 2015 Professional and Organizational Development (POD) conference, "Back to the Future: Critical Reflection, Effective Practice," San Francisco, CA: November 4-8, 2015. "Inclusive Teaching and Learning in Science, Technology, Engineering, and Mathematics" (Pre-conference Workshop: Accepted through a blind-review process)

M. J. Cahill, M.A. McDaniel, J. Zhao, and R. F. Frey: POGIL South Central Regional Meeting, University of Texas at Dallas, Dallas, TX: July 8-10, 2015. "Individual Difference in Learning Approaches and their Impact in General Chemistry" (poster)

M. J. Cahill, M.A. McDaniel, J. Zhao, and R. F. Frey: POGIL National Meeting, Washington University in St. Louis, Saint Louis, MO: May 30 – June 2, 2015. "Individual Difference in Learning Approaches and their Impact in General Chemistry" (poster)

B.A. Fisher, D. A. Leonard, E. D. Solomon, and R. F. Frey: 2014 Professional and Organizational Development (POD) Conference, "Leverage," Dallas, TX: November 5-9, 2014. "How Active is Your Class? Integrating an Observation Protocol into Multimodal Observation for Scholarly Teaching (MOST)" (presentation: accepted through a blind-review process)

D. A. Leonard and R. F. Frey: 2014 Professional and Organizational Development (POD) Conference, "Leverage," Dallas, TX: November 5-9, 2014. "An Interactive STEM Pedagogy Training Workshop for Faculty Developers" (pre-conference workshop: accepted through a blind-review process)

R. F. Frey and M. A. McDaniel: 2014 CIRCLE Conference: Integrating Cognitive Science with Innovative Teaching in STEM Disciplines, Washington University in St. Louis, St. Louis, MO: September 11-12, 2014. "Individual Differences in Learning Approaches and their Impact in General Chemistry." (presentation)

R. F. Frey, M.A. McDaniel, M. J. Cahill, M. Rauch, K. Mao, S. P. Shields, and J. Zhao: POGIL South Central Regional Meeting, University of Central Arkansas, Conway, AR: July 15-17, 2014. "Learning Approaches in General Chemistry" (poster)

M. J. Cahill**,** K. M. Hynes, R. Trousil, L. A. Brooks, M. A. McDaniel, M. D. Repice, J. Zhao, R. F. Frey: POGIL South Central Regional Meeting, University of Central Arkansas, Conway, AR: July 15-17, 2014. "Active Learning in Introductory Physics: Assessing the Benefits" (best-practices presentation)

R. F. Frey, M.A. McDaniel, M. J. Cahill, M. Rauch and J. Zhao: POGIL National Meeting, Saint Louis, MO: May 31 – June 3, 2014. "Learning Approaches in General Chemistry" (poster)

C. DuFault and R. F. Frey: 2013 Professional and Organizational Development (POD) Conference, "Freedom to Connect – Freedom to Risk – Freedom to Learn," Pittsburgh, PA: November 6-10, 2013. "Teaching Future Faculty how to Engage in SoTL Projects" (presentation: accepted through a blind-review process)

R. F. Frey and K. G. Miller: AAC&U's Network for Academic Renewal: Transforming STEM Education: Innovation, Inquiry, and Evidence, San Diego, CA: October 31 – November 2, 2013.

"Developing a STEM Teaching Community: Organizing an Integrated Network of Education Research Groups" (presentation: accepted through a blind-review process).

M. Daschbach and R. F. Frey: POGIL South Central Regional Meeting, Saint Louis, MO: July 23-25, 2013. "A Flexible, Intuitive Classroom Design that Lowers Barriers to Incorporating Active Learning" (best-practices presentation)

M. Rauch, M. Cahill, M. McDaniel, C. Kudelka, K. Mao, and R. F. Frey: POGIL South Central Regional Meeting, Saint Louis, MO: July 23-25, 2013. "Learning Approaches in General Chemistry" (poster)

M. Rauch, M. Cahill, M. McDaniel, C. Kudelka, K. Mao, and R. F. Frey: POGIL National Meeting, Saint Louis, MO: June 1 – June 4, 2013. "Effect of Student Learning Approaches on Performance in General Chemistry" (poster)

C. DuFault and R. F. Frey: 2012 Professional and Organizational Development (POD) Conference, "Pencils & Pixels: 21st Century Practices in Higher Education," Seattle, WA: October 24-28, 2012. "Developing a Scholarship of Teaching & Learning Internship." (presentation: accepted through a blind-review process)

P. L. Brown, R. K. Sawyer, M. C. Hogrebe, S. B. Luesse, D. J. Gealy, and R. F. Frey: PLTL International Society Conference, New York City, NY: May 17-19, 2012. "A Discourse Analysis of Peer-Led Team Learning (PLTL)." (presentation: accepted through a blind-review process)

S. P. Shields, M. C. Hogrebe, W. M. Spees, L. B. Handlin, G. P. Noelken, J. M. Riley, and R. F. Frey: POGIL South Central Regional Meeting, Saint Louis, MO: June 28-30, 2011. "Using POGIL in a General Chemistry Transition Program for Underprepared Students." (poster)

S. P. Shields, M. C. Hogrebe, W. M. Spees, L. B. Handlin, G. P. Noelken, J. M. Riley, and R. F. Frey: POGIL National Meeting, Saint Louis, MO: June 4-7, 2011. "Using POGIL in a General Chemistry Transition Program for Underprepared Students." (poster)

P. L. Brown, K. Sawyer, M. Hogrebe, and R. F. Frey: 2011 CCLI PI Conference, Washington, DC: January 26-28, 2011. "Discourse in Peer-led Team Learning." (poster)

M.A. McDaniel, S. P. Shields, C. Kudelka, and R. F. Frey: Symposium honoring the career of Jack Simons, Salt Lake City, UT: July 15-19, 2010. "Student-Learning Approaches: Predicting Chemistry Course Performance" (presentation)

S. Shields and R. F. Frey: POGIL Great Lakes Regional Meeting, Plattsville, WI: June 27-30, 2010. "Preliminary Implementation of Optional POGIL Recitation Sections in a Large Lecture-based General Chemistry Course." (poster)

S. C. Hockings, K. J. DeAngelis, P. L. Brown, K. Sawyer, and R. F. Frey: 2008 CCLI PI Conference, Washington, DC: August 13-15, 2008. “Peer-led Team Learning in General Chemistry.” (poster)

C. Herman, R. E. Casiday, R. K. Deppe, M. Gilbertson, D. Holten, and R. F. Frey: 17th Biennial Conference on Chemical Education; "Interdisciplinary Curricula: Chemistry Beyond Chemistry," Symposium, Bellingham, WA: July 28-August 1, 2002. "Interdisciplinary, Application-oriented Tutorials: Implementation, Design, and Evaluation." (presentation)

R. F. Frey, M. J. Donlin, and J. K. Bashkin: 211th American Chemical Society National Meeting, New Orleans, LA: March 24-28, 1996. “Analysis of Iron in Ferritin, The Iron-Storage Protein: A General Chemistry Experiment.” (presentation)

R. F. Frey and E. R. Davidson: 1989 West Coast Theoretical Chemistry Conference, Almaden, CA: May 10-12, 1989. "The Energy Partitioning of the SCF Energy of ScCO." (presentation)

R. F. Frey and E. R. Davidson: 1987 American Conference on Theoretical Chemistry, Gull Lake, MN: July 25-31, 1987. "Jahn-Teller Distortion in CH_4^+." (poster)

R. F. Frey and J. Simons: 8th Annual West Coast Theoretical Chemistry Conference, Santa Barbara, CA: April 21-25, 1986. "Molecular Dynamics Study of the Gaseous Ion-Pair cluster $NO_2^-:Li^+(H_2O)_n$." (poster)

R. F. Frey, J.O. Jensen, and J. Simons: 6th Annual West Coast Theoretical Chemistry Conference, Los Alamos, NM: April 4-6, 1984. "Correlation Studies on the Rotational Predissociation of Van der Waals Complexes." (poster)

R. F. Frey and J. Simons; 5th Annual West Coast Theoretical Chemistry Conference, Menlo Park, CA: April 27-29, 1983. "Rotational Predissociation of Van der Waals Complexes: A Classical Dynamics Approach." (poster)

Discipline-based External Workshops (facilitated)

B. A. Fisher and R.F. Frey: 2015 Professional and Organizational Development (POD) conference, “Back to the Future: Critical Reflection, Effective Practice,” San Francisco, CA: November 4-8, 2015. “Inclusive Teaching and Learning in Science, Technology, Engineering, and Mathematics" (Pre-conference Workshop: Accepted through a blind-review process)

R. F. Frey, M. Garoutte, M. Perry, and S. Richardson: POGIL South Central Regional Meeting, University of Texas at Dallas, Dallas, TX: July 8-10, 2015. Multiple POGIL workshops.

S. Shadle and R. F. Frey: POGIL National Meeting, Washington University in St. Louis, Saint Louis, MO: May 30 – June 2, 2015. “Reflective Teaching” (developed and implemented this new POGIL workshop)

D. A. Leonard and R. F. Frey: 2014 Professional and Organizational Development (POD) Conference, “Leverage,” Dallas, TX: November 5-9, 2014. “An Interactive STEM Pedagogy Training Workshop for Faculty Developers” (pre-conference workshop: accepted through a blind-review process)

B. Fetterly and R. F. Frey: 2014 Biennial Conference on Chemical Education; Grand Valley State, MI: August 3-August 7, 2014. "The POGIL Project Workshop: Introduction to POGIL.” (pre-conference workshop)

R. F. Frey, B. Mancini, M. Perry, and S. Richardson: POGIL South Central Regional Meeting, University of Central Arkansas, Conway, AR: July 15-17, 2014. Multiple POGIL workshops.

R. F. Frey and J. A. Loertscher: POGIL National Meeting, Washington University in St. Louis, Saint Louis, MO: May 31 – June 3, 2014. “Activity Feedback Workshop” and “Activity Endorsement Workshop.”

R. F. Frey and R. S. Cole: POGIL National Meeting, Washington University in St. Louis, Saint Louis, MO: May 31 – June 3, 2014. Strategic Planning Goal 4 (Assessment) Planning Sessions.

L. Frost and R. F. Frey: Miami-Dade College-West Campus, Miami, FL, April 11, 2014. "The POGIL Project Workshop: Introduction to POGIL.” (one-day workshop)

R. F. Frey, B. Mancini, M. Perry, K. Plessel, and S. Richardson: POGIL South Central Regional Meeting, Washington University in St. Louis, Saint Louis, MO: July 23-25, 2013. Multiple POGIL workshops.

R. F. Frey, M. Garoutte, M. Perry, and K. Plessel: University of Texas Medical Branch, Galveston, TX, December 13, 2013. "The POGIL Project Workshop: Introduction to POGIL.” (one-day workshop)

R. F. Frey and R. S. Cole: POGIL National Meeting, Washington University in St. Louis, Saint Louis, MO: June 1 – June 4, 2013. Strategic Planning Goal 4 (Assessment) Planning Sessions.

R. F. Frey, M. Garoutte, B. Morgan, M. Perry, S. Richardson, and S. Shields: POGIL South Central Regional Meeting, University of Texas at Dallas, Richardson, TX: July 10-12, 2012. Multiple POGIL workshops; co-chair of the conference.

M. Perry and R. F. Frey: Jackson State University, Jackson, MS, June 28, 2012. "The POGIL Project Workshop: Introduction to POGIL." (one-day workshop)

R. F. Frey, M. Garoutte, R. Lasey, B. Mancini, M. Perry, and S. Shields: POGIL South Central Regional Meeting, Washington University in St. Louis, Saint Louis, MO: June 28-30, 2011. Multiple POGIL workshops.

R.F. Frey: American Chemical Society Midwest-Great Lakes Regional Meeting; October 19-22, 2011. "Incorporating Peer-Led Team Learning (PLTL) into Lower Level Chemistry Courses: Implementation and Insights" (Invited conference workshop on Peer-led Team Learning)

Peer-leader Training Manuals (Seminar on Academic Mentoring Course); (editor and author of introduction essays)
(teachingcenter.wustl.edu/scholarship/pltl/peer-leader-training/peer-led-team-learning-training-books-sam-books/)

The One Hundred and Eleventh Gen Chem Games, Peer Leader Training Manuals (SAM books), Washington University in St. Louis; B. Lutes, M. Kundel, and R. Frey, eds.: 2013.

Book of Memes, Peer Leader Training Manuals (SAM books), Washington University in St. Louis; B. Lutes, M. Kundel, and R. Frey, eds.: 2012.

#pltlproblems, Peer Leader Training Manuals (SAM books), Washington University in St. Louis; B. Lutes and R. Frey, eds.: 2011.

Gaga for GenChem, Peer Leader Training Manuals (SAM books), Washington University in St. Louis; B. Lutes and R. Frey, eds.: 2010.

HP and the PLTL deMentor, Peer Leader Training Manuals (SAM books), Washington University in St. Louis; P. Brown and R. Frey, eds.: 2009.

Running PLTL.exe:A Handbook for PLTL Leaders, Peer Leader Training Manuals (SAM books), Washington University in St. Louis; P. Brown and R. Frey, eds.: 2008.

This Semester: Live Free or Die PLTL, Peer Leader Training Manuals (SAM books), Washington University in St. Louis; R. Frey, ed.: 2007.

Storming to Performing: The Evolution of a Good PLTL Group, Peer Leader Training Manuals (SAM books), Washington University in St. Louis; R. Frey, ed.: 2006.)

Eight Easy Ways to have the Best PLTL of your Life, Peer Leader Training Manuals (SAM books), Washington University in St. Louis; R. Frey, ed.: 2005.)

Bonding and Integration: Creating a Covalent Community, Peer Leader Training Manuals (SAM books), Washington University in St. Louis; R. Frey, ed.: 2004.)

Satisfying the Octet: Greatest Challenge as a PLTL Leader, Peer Leader Training Manuals (SAM books), Washington University in St. Louis; R. Frey, ed.: 2003.