

INSTRUCTIONAL PHILOSOPHY

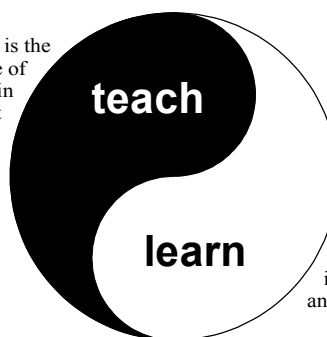
The more students engage in learning — reading, taking notes, solving problems, interacting with peers, designing and conducting experiments — the more they learn.

I believe that science learning occurs via a constructivist process. That is, I believe that learning occurs when connections are made between existing knowledge and new information, resulting in the integration of the new information and an increase in knowledge.

During formal instruction, there is a symbiotic relationship between the instructor and students. My roles and responsibilities as the instructor are to

- establish a safe instructional environment conducive to learning
- facilitate learning by relating the material to the students' existing knowledge
- engage and focus students to learn the material
- teach at a level and pace to optimize learning yet challenge students

Teaching is the conveyance of information in a mode that facilitates learning.



Learning is the integration of information leading to an increase in knowledge and/or skill.

My role is *not* to tell students the answer, but to show them how to find the answer for themselves. For this to work, students must be prepared to learn, receptive to new ideas, willing to engage in classroom activities, and they must keep up with the course material outside of class.

My academic philosophy is to support and advocate for practices that serve the long-term best interests of learners, faculty, the institution, and society. By providing learners with the best possible learning environment and best possible education, graduates enter and succeed in the workforce. Their distinguished service to their employer and to society builds the institution's reputation and ensures its longevity.

INSTRUCTIONAL PRACTICES

The best way to convey information to a diverse audience is to employ diverse instructional strategies, both inside and outside the classroom.

Reflecting on my classroom instruction, I spend 30 – 50 % of the time on instructor-led activities and 50 – 70 % on guided and student-led activities. I transition between instructional strategies regularly, creating an engaging, dynamic, and safe instructional environment.

- Common instructional strategies include lecture, demonstrations, questions to and from students, instructor-led problem solving, student-led problem solving, physical and computer models, samples, and videos. Discussion of real-world applications, career applications, and current events makes the information and chemistry relevant.
- By completing examples in class, students see how to solve problems, draw chemical structures, and how to manipulate mathematical and chemical formulae.

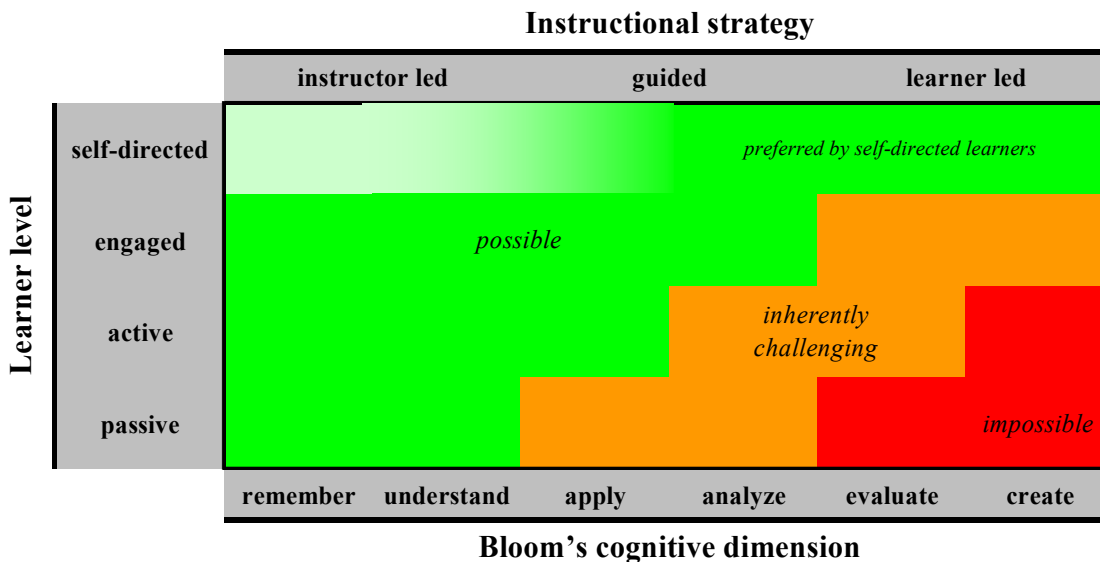
- I incorporate numerous technologies in my classes. Free software is used and provided to students to aid in visualizing the science and in calculations. I pioneered the use of *Adobe Connect* for classroom video capture, live-streaming, and student engagement (via chat and polling modules). This instructional strategy is more robust than clickers.

Outside of class, I endeavor to be relaxed and casual, which makes me approachable. I encourage and facilitate students to develop study groups. I encourage students to ask and answer questions on a course discussion forum. I have office hours, but some students are scared to attend. To address this, I hold a weekly drop-in session at the university café. These strategies work. I often have students ask questions beyond the course material: from questions about research opportunities, career opportunities, and information they found in the news or on the internet. I answer what I know and then direct students to people and resources that can further answer their questions. Often, the news items are further discussed in class.

In-term surveys ask about the efficacy of the instructional practices being used, and about other practices that could be used to improve learning.

A component of my pedagogical scholarship is understanding the learning process. Chapter 3 of *Communicating Science* is a summary of the learning process in a form suitable for learners and instructors.

The figure below is a component of my research, and illustrates the relationship between the learner, assessment (Bloom’s taxonomy), and instructional strategy.



The curriculum must be designed to build the students’ knowledge and skills, and transform the student from a passive learner to a self-directed learner. In general, students enter first-year as a passive or active learner. They leave undergraduate as an engaged learner in their chosen discipline. They leave graduate school as a self-directed learner in their chosen discipline. The preferred instructional strategies and assessment strategies depend on the learner level, as illustrated above.

How do I get buy-in from students? How do I engage them to learn? I educate them on learning!

I take 15-20 minutes of the first class to explain the transformation they will undergo as they progress through their undergraduate program, and that learning will take different forms through the progression (notably a greater expectation of independent learning).

For many of the students in first-year chemistry, these are the last chemistry courses they will take. With this understanding, I endeavor to present concepts with as many real-world applications as possible. I want students to leave my class knowing and appreciating how chemistry affects their lives. Student feedback indicates that they appreciate the enthusiasm I bring to the classroom and appreciate my efforts to engage students in learning. When asked about the most interesting thing they learned in class, approximately half identify new concepts (often quantum, spectroscopy, or kinetics), and half identify the real-world examples (cooking, hot air and helium balloons, fluorescent bulbs, etc.).

I created Readiness Assessments based on the high school curriculum. Students are encouraged to take the Assessments at the beginning of first-year to determine how much of high school chemistry they recall and to realize the expectations of first-year chemistry. Student feedback on this assessment has been positive and other instructors now use similar assessments.

In 2014, I integrated flipped instruction as another instructional strategy. I flipped the components of the course that built on material introduced in high school. This material was selected because students who recently completed high school chemistry find the instructional pace too slow while those who completed high school chemistry a few years ago find the pace too fast.

Outside of class, I encourage and facilitate students to develop study groups. I also encourage students to ask questions on a course discussion forum, and answer questions asked by other students. Students are aware that I monitor the forum to ensure the student answers are correct. Students regularly stop by my office with questions. I enjoy the one-on-one interaction and seeing the *eureka!* moment when a concept is understood. Students often ask about research opportunities, career opportunities, and information they found in the news or on the internet. I answer what I know and then direct students to people and resources that can further answer their questions. Often, the news items are further discussed in class.

Outside of academia, society perceives that science has limited applicability and is beyond the comprehension of the average person. *I vehemently disagree.* Instilling in students the importance and everyday applicability of science is the first step to correcting this fallacy. In my opinion, society would benefit if they knew the impact of science in their everyday lives. I organize and give public talks and demonstrations on science and chemistry in society.

My passion for instruction and pedagogy are exemplified by the numerous committees I have volunteered for or requested to be on: Faculty Development, Faculty Evaluation, Student Success Committee, Science Council, Academic Council, Center for Teaching and Learning, Writing Support Services, Teaching Advisory, Outreach Coordination, and numerous others.

INSTRUCTIONAL EXPERIENCE*Undergraduate courses taught*

Year¹	Course (field)	Contact Hours	Duration	Students
2017	Chemistry 102 (general)	45	15 weeks	300
2017	Chemistry 105 (engineering)	45	15 weeks	250
2017	Chemistry 105 (engineering)	45	15 weeks	200
2016	Chemistry 102 (general)	45	15 weeks	180
2016	Chemistry 103 (engineering)	45	15 weeks	200
2016	Chemistry 102 (general)	45	3 weeks	60
2016	Chemistry 105 (engineering)	45	15 weeks	250
2015	Chemistry 105 (engineering)	45	15 weeks	250
2015	Chemistry 102 (general)	45	15 weeks	190
2015	Chemistry 102 (general)	45	3 weeks	80
2015	Chemistry 105 (engineering)	45	15 weeks	250
2015	Chemistry 102 (general)	45	15 weeks	370
2015	Chemistry 102 (general)	45	15 weeks	280
2014	Chemistry 103 (general)	45	15 weeks	450
2014	Chemistry 101 (general)	45	15 weeks	430
2014	Chemistry 105 (engineering)	45	15 weeks	250
2014	Chemistry 102 (general)	45	15 weeks	400
2014	Chemistry 102 (general)	45	15 weeks	300
2013	Chemistry 103 (general)	45	15 weeks	485
2013	Chemistry 101 (general)	45	15 weeks	420
2013	Chemistry 101 (general)	45	15 weeks	250
2013	Chemistry 102 (general)	45	15 weeks	250
2013	Chemistry 102 (general)	45	15 weeks	300
2012	Chemistry 103 (engineering)	45	15 weeks	300
2012	Chemistry 101 (general)	45	15 weeks	420
2011 ⁶	Chemistry 101 (general)	60	15 weeks	60
2011 ⁶	Chemistry 101 (general)	60	15 weeks	72
2011 ⁶	Chemistry 101 (general)	60	15 weeks	72
2011 ⁶	Chemistry 102 (general)	60	15 weeks	60
2011 ⁶	Chemistry 102 (general)	60	15 weeks	72
2011 ⁶	Chemistry 102 (general)	60	15 weeks	72
2011 ⁶	Chemistry 283 (physical)	48 (lab)	15 weeks	3
2011 ⁶	Chemistry 102 (general)	60	15 weeks	72
2011 ⁶	Chemistry 102 (general)	60	15 weeks	72
2010 ⁶	Chemistry 282 (physical)	45	15 weeks	4

Undergraduate courses taught (cont.)

Year	Course (field)	Contact Hours	Duration	Students
2010 ⁶	Chemistry 101 (general)	60	15 weeks	70
2010 ⁶	Chemistry 101 (general)	60	15 weeks	70
2010 ⁶	Chemistry 102 (general)	60	15 weeks	55
2009 ⁶	Chemistry 101 (general)	60	15 weeks	60
2009 ⁶	Chemistry 101 (general)	60	15 weeks	40
2009 ⁶	Chemistry 105 (engineering)	60	15 weeks	72
2009 ⁶	Chemistry 105 (engineering)	60	15 weeks	72
2008 ⁶	Chemistry 103 (engineering)	60	15 weeks	72
2008 ⁶	Chemistry 103 (engineering)	60	15 weeks	72
2008 ⁶	Chemistry 102 (general)	60	15 weeks	44
2008 ⁶	Chemistry 102 (general)	60	15 weeks	55
2007 ⁶	Chemistry 102 (general)	60	15 weeks	48
2007 ⁶	Chemistry 101 (general)	60	15 weeks	72
2007 ⁶	Chemistry 102 (general)	36 (lab)	15 weeks	24
2007 ⁶	Chemistry 102 (general)	36 (lab)	15 weeks	24
2007 ⁶	Chemistry 102 (general)	60	15 weeks	72
2006 ⁶	Chemistry 101 (general)	36 (lab)	15 weeks	24
2006 ⁶	Chemistry 101 (general)	60	15 weeks	65
2006 ⁶	Chemistry 101 (general)	60	15 weeks	72
2006 ⁶	Chemistry 101 (general)	60	15 weeks	72
2006 ⁶	Chemistry 103 (engineering)	60	15 weeks	60
2005 ⁶	Chemistry 101 (general)	60	15 weeks	72
2005 ⁶	Chemistry 103 (engineering)	60	15 weeks	60
2005 ⁶	Chemistry 103 (engineering)	60	15 weeks	60
2005 ⁶	Chemistry 101 (general)	60	15 weeks	48
2005 ⁶	Chemistry 102 (general)	60	15 weeks	72
2005 ⁶	Chemistry 102 (general)	60	15 weeks	60
2005 ⁶	Chemistry 105 (engineering)	60	15 weeks	48
2004 ⁶	Chemistry 101 (general)	60	15 weeks	72
2004 ⁶	Chemistry 101 (general)	60	15 weeks	24
2004 ⁶	Chemistry 103 (engineering)	60	15 weeks	48
2004 ⁶	Chemistry 101 (general)	36 (lab)	15 weeks	24
2004 ⁶	Chemistry 101 (general)	60	15 weeks	72
2004 ⁶	Chemistry 102 (general)	60	15 weeks	72
2004 ⁶	Chemistry 103 (engineering)	60	15 weeks	48
2004 ⁶	Chemistry 105 (engineering)	60	15 weeks	48
2004 ⁶	Chemistry 102 (general)	36 (lab)	15 weeks	24
2003 ⁶	Chemistry 101 (general)	60	15 weeks	72
2003 ⁶	Chemistry 101 (general)	60	15 weeks	80
2003 ⁶	Chemistry 103 (engineering)	60	15 weeks	48

Undergraduate courses taught (cont.)

Year	Course (field)	Contact Hours	Duration	Students
2003 ⁶	Chemistry 101 (general)	36 (lab)	15 weeks	24
2003 ⁴	Chemistry 060 (general)	14	1 week	41
2002 ⁵	Chemistry 364 (physical)	56 (lab)	14 weeks	10
2002 ⁵	Chemistry 364 (physical)	56 (lab)	14 weeks	7
2002 ⁵	Chemistry 212 (analytical)	2	1 week	26
2002 ⁴	Chemistry 121 (general)	42 (lab)	14 weeks	28
2002 ⁴	Chemistry 121 (general)	42 (lab)	14 weeks	28
2001 ⁴	Chemistry 121 (general)	42 (lab)	14 weeks	27
2001 ⁴	Chemistry 121 (general)	42 (lab)	14 weeks	27
2001 ⁴	Chemistry 060 (general)	56 (lab)	7 weeks	29
2001 ⁴	Chemistry 060 (general)	42 (lab)	7 weeks	29
2001 ⁵	Chemistry 347 (physical)	56 (lab)	14 weeks	6
2001 ⁵	Chemistry 212 (analytical)	56 (lab)	14 weeks	10
2001 ⁵	Chemistry 212 (analytical)	56 (lab)	14 weeks	12
2000 ⁵	Chemistry 346 (physical)	56 (lab)	14 weeks	6
2000 ⁵	Chemistry 347 (physical)	56 (lab)	14 weeks	10
2000 ⁵	Chemistry 347 (physical)	56 (lab)	14 weeks	10
1999 ⁵	Chemistry 347 (physical)	56 (lab)	14 weeks	7
1999 ⁵	Chemistry 312 (analytical)	42 (lab)	14 weeks	10
1999 ⁵	Chemistry 245 (physical)	56 (lab)	14 weeks	14
1999 ⁵	Chemistry 150 (general)	42 (lab)	14 weeks	14
1998 ⁵	Chemistry 245 (physical)	56 (lab)	14 weeks	15
1998 ⁵	Chemistry 245 (physical)	56 (lab)	14 weeks	16
1998 ³	Chemistry 111 (general)	42 (lab)	7 weeks	18
1998 ³	Chemistry 111 (general)	42 (lab)	7 weeks	18
1996 ²	Chemistry 2130 (inorganic)	30 (lab)	10 weeks	13
1996 ²	Chemistry 2040 (analytical)	30 (lab)	10 weeks	19
1995 ²	Chemistry 1540 (general)	30 (lab)	10 weeks	15

1. Courses are taught at the University of Alberta, unless specified.
2. University of Denver, Denver, Colorado
3. Red Rocks Community College, Lakewood, Colorado
4. Camosun College, Victoria, British Columbia
5. University of Victoria, Victoria, British Columbia
6. Grant MacEwan University, Edmonton, Alberta

TEACHING AWARDS

2017	Student-selected speaker for the ISSS (Interdepartmental Science Students' Society) graduation banquet
2017	ISSS Teaching Excellence award
2016	Student-selected speaker for the ISSS graduation banquet
2015	Δ X (Delta Chi) Teacher Excellence Appreciation award
2003	Nominated for the President's Distinguished Service Team award at the University of Victoria.
2003	Andy Farquharson award for excellence in graduate student teaching.
1997	Visiting Scientist of the Year award from Metropolitan State College of Denver.

PUBLICATIONS AND PRESENTATIONS

Research publications are listed in my Curriculum Vitae.

Articles published in refereed journals

Jensen, R. H. "A two-dimensional test item analysis" <in preparation>.

Jensen, R. H. "Dynamic grading of student laboratory results" <in preparation>.

Jensen, R. H. "Buoyancy and high-altitude ballooning: the Red Bull Stratos mission" *Physics Education*, 48, 707, **2013**.

Articles published in non-refereed journals

Jensen, Roy H. "Redefining Plagiarism" *University Affairs*, **2012**. This article summarizes a main article available at www.consol.ca/Plagiarism.pdf.

Books and monographs

Jensen, Roy H., *Strategic De-escalation* is a resource for law enforcement, from peace officers to security personnel. This course is a verbal control training program that law enforcement can take to better handle themselves and those they interact with, **2018**.

Jensen, Roy H., *CTSS Instructor Guide* is a resource for Control Tactics and Survival Skills (CTSS) instructors. The CTSS program is a series of physical control courses that law enforcement can take to better handle themselves and those they interact with, **2016**.

Jensen, Roy H., *Communicating Science* (second edition) is an undergraduate science communication book to assist students convey scientific information to academic and public audiences. The second edition significantly expands Chapter 3 (Fundamentals of learning) and Chapter 4 (Research methodology). **2016. circulation: freely available online**

Jensen, Roy H., *Exploring Chemistry* (field test IV) is a first-year chemistry textbook. The text consists of 20 core chapters plus chapters on the applications of chemistry in specialized fields (food science, forensic science, pharmaceutical science, etc.), **2015. circulation: freely available online**

Jensen, Roy H., *Communicating Science* (first edition), **2014.**

Jensen, Roy H., *Exploring Chemistry* (field test III), **2010. circulation: course students only**

Jensen, Roy H., *Exploring Chemistry* (field test II), **2009. circulation: course students only**

Jensen, Roy H., *Exploring Chemistry* (field test I), **2008. circulation: course students only**

Working with the Laboratory Supervisor, we revised and rewrote many of the MacEwan first-year chemistry laboratory manuals, **2004-5.**

Jensen, Roy H. "Applied statistics in chemistry", This document forms part of the analytical and physical laboratory manuals at the University of Victoria and a stand alone document available from www.consol.ca, **2002.**

Oral presentations

Jensen, R. H. "Chemistry in the world around you", closing presentation and demonstration to the Edmonton Science Olympics, Edmonton, **February 2015.**

Jensen, R. H. "*Exploring Chemistry*: learning about the world around you", keynote presentation, TeamUP Science Interdisciplinary Science Competition, University of Alberta, **February 2015.**

Jensen, R. H. "Student engagement strategies in LARGE first-year classes", Think Outside the Lecture: Strategies for Active Learning symposium, University of Alberta, **August 2014.**

Jensen, R. H. "Preparing students to *Communicate Science* in academia and beyond", Biennial Conference on Chemical Education (BCCE), Grand Valley State University, Allendale, Michigan, **August 2014.**

Jensen, R. H. "Preparing students to *Communicate Science* in academia and beyond", International Conference on Chemical Education (ICCE), Toronto, Ontario, **July 2014.**

Jensen, R. H. "Technology facilitated learning: eLearning and classroom lecture capture at the UofA", invited presentation to the chemistry department at the University of Alberta, **December 2013.**

Jensen, R. H. "Science everywhere!", keynote presentation and demonstration, All Science Challenge (part of the Let's Talk Science program at the University of Alberta), **May 2013.**

Jensen, R. H. "Pedagogical barriers & pedagogical continuity", invited presentation, Alberta Chemistry Educators annual meeting, Lethbridge, Alberta, **June 2012.**

Jensen, R. H. "The future of the textbook", invited panelist, College Chemistry Canada (C₃) conference, Mt. Royal University, Calgary, Alberta, **June 2012.**

Jensen, R. H. "Exploring Chemistry: a micropublishing success", Biennial Conference on Chemical Education (BCCE), University of North Texas, Denton, Texas, **August 2010.**

Jensen, R. H. “Computational chemistry first!”, Biennial Conference on Chemical Education (BCCE), University of North Texas, Denton, Texas, **August 2010**.

Jensen, R. H. “Exploring Chemistry: A micropublishing success”, Chemical Society of Canada Conference, Toronto, Ontario, **June 2010**.

Jensen, R. H.; Sheppard, M. “Alternate grading of student experimental results”, Chemical Society of Canada Conference, Toronto, Ontario, **June 2010**.

Jensen, Roy H. “Barriers to Post-Secondary Science: transitioning from high school”, Alberta Teachers Association, Science Council (ATASC) conference, Red Deer, Alberta, **November 2009**.

Jensen, Roy H. “Barriers to Post-Secondary Science: transitioning from high school”, invited presentation to the University of Alberta WISEST (Women in Science, Engineering, and Technology) students, University of Alberta, **August 2009**.

Jensen, Roy H. “Barriers to Post-Secondary Science: transitioning from high school”, invited presentation at the Alberta Biology and Chemistry Regionals conference, sponsored by Alberta Education, **May 2009**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, Greater Edmonton Teacher’s Convention Association (GETCA), **February 2009**.

Jensen, Roy H. “Leadership: doing what’s right and/or easy”, invited presentation to the MacEwan Student Ambassador Program, **February 2009**.

Jensen, Roy H. “Barriers to Post-Secondary Science: transitioning from high school”, invited presentation at the Science and Mathematics Education Students’ Association (SMESA) conference, University of Alberta, Alberta, **January 2009**.

Jensen, R. H. “Pedagogical Continuity: Minimizing learning barriers”, Alberta Teachers Association, Science Council (ATASC) conference, Calgary, Alberta, **November 2008**.

Jensen, R. H. “Pedagogical Continuity: Minimizing learning barriers”, Biennial Conference on Chemical Education (BCCE), Indiana University, Bloomington, Indiana, **July 2008**.

Jensen, R. H.; Sheppard, M. “Dynamic grading of student laboratory results”, Biennial Conference on Chemical Education (BCCE), Indiana University, Bloomington, Indiana, **July 2008**.

Jensen, R. H. “Pedagogical Continuity: Minimizing learning barriers”, Biennial Conference on Chemical Education (BCCE), Indiana University, Bloomington, Indiana, **July 2008**.

Jensen, R. H. “Pedagogical Continuity: Minimizing learning barriers”, College Chemistry Canada (C₃) conference, Edmonton, Alberta, **June 2008**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, invited presentation at the Science and Mathematics Education Students’ Association (SMESA) conference, University of Alberta, Alberta, **January 2008**.

Jensen, Roy H. “Chemical Explorations: discovery and understanding”, Opening keynote presentation at the Society for the Advancement of Gifted Education (SAGE) conference, Northern Alberta Institute of Technology (NAIT), Edmonton, Alberta, **November 2007**.

Jensen, Roy H. “Chemistry Exploitation: careers in science”, Dream Catchers conference, Grant MacEwan University, Edmonton, Alberta, **October 2007**.

Jensen, Roy H. “Chemistry in the world around you”, Young Scientists conference, University of Alberta, Alberta, **2007**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, invited presentation at the Science and Mathematics Education Students’ Association (SMESA) conference, University of Alberta, Alberta, **January 2007**.

Jensen, Roy H. “Science Outreach: Scientists in the classroom”, invited presentation at the Science and Mathematics Education Students’ Association (SMESA) conference, University of Alberta, Alberta, **January 2007**.

Gelmini, Lucio; Jensen, Roy H. “Science Outreach: Scientists in the Classroom”, Annual Alberta Teachers Association Science Council (ATA SC) conference, Kananaskis, Alberta, **November 2006**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, Annual Alberta Teachers Association Science Council (ATA SC) conference, Kananaskis, Alberta, **November 2006**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, a presentation to invited science teachers (open invitation), Grant MacEwan University, **February 2006**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, Science Immersion Workshop (Edmonton Science Outreach Network), University of Alberta, **January 2006**.

Jensen, Roy H. “Pedagogical Continuity: Errant Topics in Chemistry”, Chemical Education 2005 Conference, University of British Columbia, **August 2005**.

Jensen, Roy H. “GRADEKEEPER: a record keeping program”, Learning & Teaching Center, University of Victoria, **2001**.

Jensen, Roy H. “Computer based record keeping”, Learning & Teaching Center, University of Victoria, **2001**.

Poster presentations

Jensen, R. H. “*inClass Live*: using Adobe Connect[®] for blended instruction”, Blended Learning Symposium, University of Alberta, Edmonton, Alberta, **December 2013**.

Jensen, R. H.; Sheppard, M. “Dynamic grading of student laboratory results”, 2008 College Chemistry Canada (C₃) conference, Edmonton, Alberta, **July 2008**.

CURRICULUM AND COURSE DEVELOPMENT, AND INNOVATIVE TEACHING**University of Alberta**

- 2016 – 2017 Member of the UofA Scholarly Writing Support Working Group. This group is tasked with making recommendations for the improvement of writing services.
- 2015 – 2016 CHEM 101 laboratory course redesign: restructuring the course to integrate guided inquiry and higher-level learning activities and objectives.
- 2015 – 2016 Interdisciplinary program design team: developing lecture and laboratory courses for interdisciplinary streams in the first-year science program.
- 2014 – 2015 CHEM 10x redesign team: integration of web-enhanced and blended instructional strategies into the CHEM 10x curriculum.
- 2013 – 2017 On2Campus Outreach Committee, an committee overseeing the plethora of outreach programs on campus
- 2013 – 2017 Visiting scientist with USchool, a UofA initiative to showcase science to junior high and high school students.
- 2014 At the request of the Provost's Digital Learning Committee, I provided two documents: ① a review of academic copyright and intellectual property issues, and ② an opinion of the draft IP License being drafted for use at the University.
- 2013 I successfully adapted UofA technology to video capture the lecture classroom. Student feedback was phenomenally positive (please see the STUDENT FEEDBACK).

Alberta Education

- 2016 – 2017 Post-secondary member of the Alberta Education Sciences Expert Working Group, which is tasked with reviewing and revising the K–12 curriculum.
- 2013 – 2017 Advisor on revisions to the Chemistry 20/30 curriculum.
- 2006 Reviewed the Chemistry 30 data booklet for accuracy and currency.
- 2005 – 2008 Consultant regarding revisions to the high school chemistry curriculum and high school textbook.
- 2004 – 2017 Curriculum consultant with Alberta Learning on chemical education and technical reviewer for chemistry 30 and science 30 provincial exams.
- 2004 – 2012 Technical reviewer of the chemistry 30 provincial exams.

Grant MacEwan University

2010 – 2012 With the development of baccalaureate degrees, I was involved in developing the Physical Sciences degree program, designing the new laboratories, and in instrument purchasing, installation, and commissioning.

I led the development team of

Computational chemistry: this second-year course provides students with an introduction to computers for data acquisition, data processing, and data reporting. The focus is on understanding the capabilities and limitations of the computational software, less so on the underlying theory. The course uses computational software, kinetic modeling software, and mathematical software, and the Microsoft Office[®] suite of programs.

Chemical energetics: this senior-level course surveys the physical chemistry of macroscopic systems, exploring thermodynamics, chemical and phase equilibria, colligative properties, electrochemistry, etc.

Scientific inquiry and communication: this second-year course focuses on skills critical to success in science: scientific communication, research methodology, information literacy, presentation skills, and communication skills. This course was developed by a multidisciplinary team of librarians, writing faculty (English & professional writing), and science faculty.

I assisted with the development of

Applied spectroscopy: this second-year course focuses on the practical aspects of preparing and running samples, analyzing spectra, and characterizing organic, inorganic, and biological compounds. Methods are explored from a theoretical and practical perspective and include X-ray crystallography, NMR, IR, and UV-Vis spectroscopy, and mass spectrometry.

Environmental chemistry: this second-year course applies analytical and physical chemistry methods to understand and quantify the sources, distribution, and sinks of air, water, and soil pollutants.

2006 – 2009 First-year chemistry laboratory supervisor. Responsible for scheduling laboratory experiments, preparing laboratory quizzes and the laboratory final exam, maintaining and updating the laboratory manuals and supporting material, ensuring uniform presentation and conduct of the laboratory instructors, and addressing student concerns.

2006 – 2007 Mentor in the Mentorship Program: a program designed to develop teaching excellence through the facilitation of a collegial learning process between newer and more experienced faculty.

2005 – present Visiting scientist with the Edmonton Science Outreach Network.

2005 – 2012 Visiting scientist with the MacEwan science outreach program.

- 2005 – 2012 Developed and coordinated a chemistry outreach program where MacEwan instructors visit local grade schools. (This initiative has evolved to become a science outreach program within the Faculty of Arts and Science at Grant MacEwan University.)
- 2004 Developed a portable demonstration cart for the safe transportation of chemicals and safety equipment to classrooms without necessary facilities.

University of Victoria

- 2002 Assisted in the development of a new analytical laboratory course. The duties involved preparing new experiments, co-authoring the laboratory manual, and writing data analysis programs.

University of Denver

- 1996 – 1998 Another graduate student and I organized the Chemistry Club at the University of Denver. We pioneered an outreach program where graduate students and senior undergraduates gave presentations and demonstrations in local grade schools. Our presentations were well received by over thirty classes of students from 1996 to 1998. The students were entertained and excited. The presenters learned some interesting chemistry and practiced their teaching skills.
- 1995 – 1997 The Chemistry department at the University of Denver was incorporating technology in the laboratory program. I assisted by developing computer programs to interface instruments and analysis software. This allows the student to focus on the underlying *chemistry*, rather than the calculations.

PROFESSIONAL DEVELOPMENT (LEADER)

Conferences

- August 2010 **Hosted** three symposia — “Micropublishing”, “Strategies for Student Engagement in General Chemistry”, “Physical Chemistry: Applied, Interesting, and Relevant” — at the Biennial Conference on Chemical Education (BCCE), University of North Texas, Denton, Texas.
- July 2008 **Hosted** a symposium — “Publishing for Today’s Learner” — at the Biennial Conference in Chemical Education (BCCE) Biennial Conference on Chemical Education (BCCE), Indiana University, Bloomington, Indiana.
- June 2008 **Organized** and hosted the third annual Alberta Chemistry Educators (ACE) meeting at MacEwan.

*Workshops***University of Alberta**

- 2016 **Presenter** at the Center for Teaching and Learning, presenting on large classroom engagement strategies.
- 2016 **Presenter** at the Center for Teaching and Learning, presenting on the use of *Adobe Connect* for classroom lecture capture.
- 2015 **Presenter** at the Center for Teaching and Learning, presenting on large classroom engagement strategies.
- 2015 **Presenter** at the Faculty of Science, presenting on large classroom engagement strategies.
- 2015 **Presenter** at the Center for Teaching and Learning, presenting on the use of *Adobe Connect* for classroom lecture capture.
- 2014 **Presenter** at the Center for Teaching and Learning, presenting on the use of *Adobe Connect* for classroom lecture capture.
- 2013 **Presenter** at the Chemistry Department, presenting on the use of *Adobe Connect* for classroom lecture capture.

Other institutions and organizations

- 2006 – 2007 **Organized** a casual open forum (coffee shop environment) where instructors can meet and discuss issues of pedagogical interest. These forums are held twice a month during the academic year.
- 2007 **Presenter** at the University of Alberta Young Scientist Conference.
- 2006 **Organized**, in association with MacEwan Faculty Development, a workshop series that provides faculty with instructional strategies through peer (faculty – faculty) instruction, panel sessions, and from invited speakers.
- 2004 – 2005 **Organized**, with Dr. Lucio Gelmini and Debra Campbell (Alberta Learning), seminars and social events for local high school teachers. These events are designed to bring high school and college instructors together to build networks to improve the transition between high school and college and promote continuing education opportunities to high school instructors. (4 hours each)
- 2002 **Facilitator**, with the Learning and Teaching Center (UVic), for new graduate-student instructors. Topics included Instructor Resources, Teaching Tips, and Critical Incident situations. (3 × 1 hour)

PROFESSIONAL DEVELOPMENT (PARTICIPANT)

- April 2017 **CCCE Conference on Electronic Educational Resources**
- April 2017 **Bystander Intervention Workshop**
- April 2017 **Blended Learning: Blended Interactions** (2 days)
- November 2016 **Conference on Computers in Chemical Education**
- August 2016 **Harris Teaching Workshop** on industrial chemistry (2 days)
- May 2016 **Festival of Teaching** (2 days)
- April 2016 **CCCE Conference on Chemical Weapons**
- April 2016 **University of Alberta Privacy and Security training**
- April 2016 **Measuring Teaching Scholarship**
- March 2016 **QPR Suicide Prevention Training**
- November 2015 **Conference on Computers in Chemical Education**
- November 2015 **Use of eClass Statistics To Improve Quizzes**
- September 2015 **Care and Teaching of First Year Students**
- June 2015 **Alberta Chemistry Educators (ACE) conference**
- May 2015 **Harris Teaching Workshop** on interdisciplinary chemistry (2 days)
- May 2015 **Multifaceted summative evaluation of teaching symposium**
- April 2015 **CCCE Conference on Interactive Visualizations**
- December 2014 **Technology tools to support active learning in the classroom**
- November 2014 **Conference on Computers in Chemical Education**
- August 2014 **Biennial Conference on Chemical Education (BCCE)** in Allendale MI. I gave two presentations:
 Student engagement strategies in LARGE first-year classes
 Preparing students to *Communicate Science* in academia and beyond
- August 2014 **International Conference on Chemical Education (ICCE)** in Toronto, Ontario. I gave a presentation:
 Preparing students to *Communicate Science* in academia and beyond
- May 2014 **Harris Teaching Workshop** on enhancing the undergraduate experience (2 days)
- May 2014 **Back to basics before flipping** (1 day)

April 2014	CCCE Conference on Flipped Instruction
April 2014	Course (Re)Design
Mar 2014	Flipping your classroom
August 2013	Blended Learning Symposium (1 day)
August 2013	Adobe Connect Level 2
August 2013	Adobe Connect Level 1
July 2013	Student Engagement Strategies for the Large Classroom
June 2013	Alberta Chemistry Educators (ACE) conference
May 2013	Harris Teaching Workshop on electronic resources for teaching chemistry (2 days)
June 2012	Alberta Chemistry Educators (ACE) conference
June 2012	College Chemistry Canada (C₃) (3 days)
May 2012	Canadian Society for Chemistry (CSC) (5 days)
May 2012	Harris Teaching Workshop on concepts and misconceptions in chemistry (2 days)
June 2011	ACE conference in Edmonton, Alberta (1 day)
May 2011	Harris Teaching Workshop on teaching chemistry laboratories (1 day)
September 2010	Inclusive Rhetorical Practices and Uses of Silence in the Classroom
September 2010	Scholarship of Teaching and Learning (SoTL) Strategy Session
August 2010	Biennial Conference on Chemical Education (BCCE) in Denton, Texas. I gave two presentations and organized and chaired three symposia (5 days) Strategies for student engagement in first-year chemistry Physical and Computational Chemistry in the Undergraduate Curriculum: Applied, Interesting, and Relevant Micropublishing
June 2010	ACE conference in Calgary, Alberta (1 day)
June 2010	Canadian Society for Chemistry (CSC) conference (5 days)
June 2010	Peer Observation Skill Development
June 2009	ACE conference in Red Deer, Alberta (1 day)
May 2009	Scholarship of Teaching and Learning by Dr. Eileen Herteis

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- May 2009 **Multiple Choice Testing** by Dr. David DiBatista
- April 2009 **Classroom Assessment Techniques** by Dr. Thomas Angelo (author of CATs)
(2 days)
- July 2008 **Multiple choice testing**
- July 2008 **Biennial Conference on Chemical Education (BCCE)** in Bloomington, Indiana. I gave two presentations and organized and chaired a symposium on ‘Publishing for today’s learner’. (5 days)
- June 2008 **ACE conference** I organized and hosted this conference at Grant MacEwan University. (1 day)
- June 2008 **Canadian Society for Chemistry (CSC) conference** (5 days)
- June 2008 **College Chemistry Canada (C₃) conference** I gave two presentations and co-chaired a session on ‘Demonstration showcase: lights, camera, action!’ (3 days)
- February 2008 **Intellectual Properties Ownership: Faculty Members’ Rights and Responsibilities**
- February 2008 **Making Lectures More Meaningful: Integrating Active Learning**
- November 2007 **Society for the Advancement of Gifted Education (SAGE) conference** I presented the opening keynote lecture. (2 days)
- June 2007 **ACE conference** in Calgary, Alberta (1 day)
- May 2007 **Peer Review of Teaching** (1 day)
- May 2007 **Using Brain Research to Enhance and Energize Instruction** (1 day)
- March 2007 **Scholarly Teaching**
- March 2007 **Peer Evaluation**
- February 2007 **Instructional Skills Workshop** (5 days)
- November 2006 **Statistics and Data Analysis for Smarties**
- November 2006 **The Effect of Classroom Peer Observation on Teaching Improvement**
- November 2006 **Designing Effective Machine Scored Questions**
- November 2006 **Peer Evaluation Workshop** (2 days)
- June 2006 **Great Teachers’ Seminar** in Banff, Alberta (5 days)
- 2006 **Orientation to the new Faculty Evaluation System** (1 day)
- 2006 **Activities for a Dynamic Learning Environment** (1 day)

- 2006 **Catching Them as they Fall**
- 2006 **Teaching and Learning with the Brain in Mind**
- 2006 **Peer Review Forum**
- 2005 **Chemical Education conference** (4 days)
- 2004 **Biennial Conference on Chemical Education (BCCE)** in Ames, Iowa (5 days)
- 2004 **Opportunities in Conflict** workshop. (1 day)
- 2004 **Harris Teaching Workshop** on teaching first-year chemistry (1 day)
- 2004 **Preparing Multiple Choice Questions that Demand Critical Thinking**
workshop
- 2004 **Interactive Learning Object Design workshop** (1 day)
- 2003 **Improving Online Accessibility**
- 2003 **Copyright Issues for Online Course Development**
- 2001 **Conflict Resolution Workshop** at the University of Victoria. (2 days)
- 2000 **Instructional Skills Workshop** (3 days)