Kelly Y. Neiles, Ph.d

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EDUCATION

*The Catholic University of America*

Doctorate of Chemical Education 2012

Dissertation Title: An Investigation of the Effects of Reader Characteristics on

Reading Comprehension of General Chemistry Text.

*The George Washington University*

M.S. in Forensic Chemistry 2008

*South Dakota State University*

B.S. Chemistry 2005

American Chemical Society Accredited

Minor: Criminal Justice

professional EXPERIENCE

**Assistant Professor**

*St. Mary’s College of Maryland: St. Mary’s City, MD* **2013*-*Present**

Courses: General Chemistry I (with recitation) and II (with laboratory), Contemporary Chemistry

(non-science majors), and Science Education: Research and Practice

**Adjunct Faculty**

*Northern Virginia Community College (NOVA): Alexandria, VA* **2012-13**

Courses: General Chemistry I and II and College Chemistry I

(non-science majors) both lecture and laboratory components.

**Research Faculty**

*The Catholic University of America: Washington, D.C.*  **2012-13**

**Adjunct Faculty**

*The George Washington University and*

*The American Association for the Advancement of Science (AAAS): Washington, D.C.* 2012

Course: NGSS aligned Physical Sciences II (Chemistry)

**Adjunct Faculty**

*The Catholic University of America: Washington, D.C.* 2011

Course: Science on the Stand

**Research Assistant**

*The Catholic University of America: Washington, D.C.* 2008-11

**Adjunct Faculty**   **2010**

*The Catholic University of America and Metropolitan College: Kruibeke, Belgium*

Course: Chemistry in our Lives (non-science majors)

Adjunct Faculty 2007

*The Catholic University of America: Washington, D.C.*

Course: General Chemistry I

**Lab Manager (Chemistry Department)**

*The Catholic University of America: Washington, D.C.*  **2007-08**

Honors, distinctions, and awards

* Theodore Ashford Fellowship at the American Chemistry Society Division of Chemical Education Examinations Institute, Spring/Summer 2020, $15,000.
* Homer L. Dodge Award for Excellence in Teaching by a Junior Faculty Member, 2018.
* 2018 Convocation Speaker at St. Mary’s College of Maryland
* St. Mary’s College of Maryland Grant Writing Fellowship, 2014, $2,000.
* Passed doctoral defense with distinction (an honor awarded to only 5% of CUA doctoral graduates).

Professional Affiliations

* American Chemical Society (ACS)
* ACS Division of Chemical Education (DivCHED)
* National Association for Research in Science Teaching (NARST)

PUBLICATIONS: refereed

Neiles, K.Y., Bowers, G., Chase, D., VerMeulen, A., Hovland, D., Eller, L., Koch, A. (2019). Teaching collaborations and scientific practices through a vertically scaffolded biodiesel lab experience. *Journal of Chemical Education.*

Schlussel, A., Rhodes, A., Neiles, K.Y., Elliott, S. L. (2018). A hands-on discussion-based activity that demonstrates biomagnification & connects it to food webs & trophic pyramids. The American Biology Teacher, 80 (5), pp 385-387.

Streu, C.N., Reif, R.D., Neiles, K.Y., Schech, A.J., Mertz, P.S. (2016). Drug synthesis and analysis on a dime: A capstone medicinal chemistry experience for the undergraduate biochemistry laboratory. Journal of Chemical Education, 93(12), pp 2084-2088.

Neiles, K.Y., Todd, I., Bunce, D.M. (2016). Establishing the validity of using network analysis software for measuring students’ mental storage of chemistry concepts. Journal of Chemical Education, 93(5), pp 821-831.

Neiles, K.Y. (2014) Measuring Knowledge: Tools to Measure Students’ Mental Organization of Chemistry Information. In Tools of Chemical Education Research. Ed. Bunce, D.M. and Cole, R. American Chemistry Society, Washington DC. Oxford University Press, Inc.

Neiles, K.Y., Flens, E.A., Bunce, D.M., Ferguson, M. (2011) Development and refinement of a research study assessing student attention in General Chemistry. In *Investigating Classroom Myths Through Research on Teaching and Learning*. Ed. Bunce, D.M. American Chemistry Society: Washington, D.C.

Bunce, D.M., J.R. VandenPlas, Neiles, K.Y.**,** Flens, E.A., (2010) Development of a valid and reliable student achievement and process skills instrument. Journal of College Science Teaching. 35(5), 50-55.

Bunce, D.M., Flens, E.A., Neiles, K.Y. (2010) How Long Can Students Pay Attention in Class?  A Study of Student Attention Decline Using Clickers. Journal of Chemical Education. 87(12), 1438-1443.

publications: in preparation

Neiles, K.Y., Arnett, K. (In Progress). Chemistry laboratories through backward design: Creating experiences with desired results and assessment in mind. *Journal of Chemical Education.*

Neiles, K.Y., Todd, I., Judd, K. (In Progress). Textbook use in general chemistry: An in-depth investigation of general chemistry students’ use of textbooks and textbook components. *Journal of Chemical Education.*

Professional presentations

*Papers*

Bauer, C., Cole, R., Daubenmire, P., Havanki, K., Komperda, R., Neiles, K.,Vandenplas, J., Wrenne, A., and Bunce, D. (2019, March). Research Jam: An interactive experience to explore how a chemical education research experiment is conceived. Presented at the 257th American Chemistry Society, National Meeting, Orlando, FL.

Neiles, K.Y., Koch, A.S. (2017, August) Designing chemistry labs through CER: Using what we know about student learning in chemistry to develop and assess a cross-curricular biodiesel lab experience (Part 1). Presented at the 254th American Chemistry Society, National Meeting, Washington, D.C.

Koch, A.S., Neiles, K.Y. (2017, August) Designing chemistry labs through CER: Using what we know about student learning in chemistry to develop and assess a cross-curricular biodiesel lab experience (Part 2). Presented at the 254th American Chemistry Society, National Meeting, Washington, D.C.

Neiles, K.Y. (2016, August) Exploration of how in-lecture text references affect students’ use of their general chemistry textbooks. Presented at the 2016 Biennial Conference on Chemical Education, Greeley, CO.

Neiles, K.Y. (2014, August) Comparison of general chemistry students’ use of open-source texts versus traditional paper texts. Presented at the 2014 Biennial Conference on Chemical Education, Allendale, MI.

Neiles, K.Y. (2014, March) Pathfinder: A novel measurement tool for investigating students' structural

knowledge in chemistry. Presented at the 247th American Chemistry Society, National

Meeting, Dallas, TX.

Neiles, K.Y. (2012, July) Using novel methods to investigate how the cognitive processes involved in reading affect undergraduate students’ comprehension of a general chemistry text. Presented at 2012 Biennial Conference on Chemical Education, University Park, PA.

Bunce, D.M., VandenPlas, J.R., Neiles, K.Y., and Flens, E.A. (2010, March). Investigation of the effect of POGIL on student achievement and process skills in general chemistry. **Presented at the 239th American Chemical Society, National Meeting, San Francisco, CA.**

Flens, E.A., Neiles, K.Y., Bunce, D.M. (2010, March). **How long can students pay attention in class? A study of student attention decline using clickers. Presented at the 239th American Chemical Society, National Meeting, San Francisco, CA.**

*Workshops*

Neiles, K.Y. (2016) Academic Assessment Plans in Higher Education: Getting Started on the Difficult Task of Assessing our Students’ Learning. Workshop at the 2016 Biennial Conference on Chemical Education, Greeley, CO.

Neiles, K.Y. (2016) Open Source Teaching Materials: Tailoring the Text and Other Teaching Materials to Meet the Needs of Your Classroom. Workshop at the 2016 Biennial Conference on Chemical Education, Greeley, CO.

Neiles, K.Y. (2014) Open Source Teaching Materials: Tailoring the Text and Other Teaching Materials to Meet the Needs of Your Classroom. Workshop at the 2014 Biennial Conference on Chemical Education, Allendale, MI.

Moore, J., Bunce, D.M., Neiles, K.Y., Flens, E.A., Tomney, M. (2011, July). Summit Conference on ChemEd DL/Chem Ed Research. Workshop presented at The Catholic University of America, Washington, D.C.

Neiles, K.Y., Flens, E.A, Bunce, D.M. (2010, August).**Chemical Education Research: Statistics Workshop. Workshop presented at the 2010 Biennial Conference on Chemical Education, Denton, TX.**

Bunce, D.M., Flens, E.A. Neiles, K.Y. (2010, August).Chemical Education Research – Developing Researchable Questions and Corresponding Methodologies. Workshop **presented at the2010 Biennial Conference on Chemical Education, Denton, TX.**

*Posters*

Neiles, K.Y., Bunce, D.M., Flens, E.A., Tomney, M. (2011, June). An investigation of a new tool to measure student knowledge representation in long term memory of general chemistry topics. Gordon Research Conference, Davidson, NC.

Neiles, K.Y., Bunce, D.M., Perencevich, K.C. (2010, August). Identification and use of chemical propositions by experts to solve a conceptual chemistry problem. Biennial Conference on Chemical Education, Denton, TX.

Flens, E.A, Neiles, K.Y., Bunce, D.M., Tomney, M. (2011, June). A study of student problem solving behavior in a resource-rich electronically based chemistry learning environment. Gordon Research Conference, Davidson, NC.

*Invited Talks*

Bauer, C., Cole, R., Daubenmire, P., Havanki, K., Komperda, R., Neiles, K.,Vandenplas, J., Wrenne, A., and Bunce, D. (2019, March). Research Jam: An interactive experience to explore how a chemical education research experiment is conceived. Presented at the 257th American Chemistry Society, National Meeting, Orlando, FL.

Neiles, K.Y. (2012). Theories of Learning: Can a better understanding of how students’ minds work help us become more effective chemistry teachers? Mississippi Local Section of the American Chemistry Society.

Neiles, K.Y. (2012). How research grounded in learning theories can be used to inform our chemistry teaching practices. Mississippi Local Section of the American Chemistry Society.

Neiles, K.Y. (2012). A workshop on the creation (or altering) of chemistry teaching resources to better align with what we know from learning theories. Mississippi Local Section of the American Chemistry Society.

Student research activities

*Undergraduate Research Advisees*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Student  (Graduation Yr) | Major Project/Thesis | # Semesters/  Summers/  SMP | Post-Graduate Education |
| 15 | Alexander VonVorys  (2019) | Learning and Understanding abstract concepts in chemistry | 2/0/SMP |  |
| 14 | Sarah Connell  (2019) | Does a targeted intervention utilizing physical manipulatives help students better answer quiz and exam questions on often difficult organic chemistry topics? | 2/0/SMP |  |
| 13 | Saspa Brooks (2018) | Pathfinder as a tool for measuring statistical knowledge in psychology majors. | 3/0/SMP |  |
| 12 | Emily Thompson (2018) | Raman spectroscopy as a tool for forensic science. (literature review) | 3/0/SMP |  |
| 11 | Katherine Judd (2018) | Investigating student utilization of textbook elements in reaction mechanisms through eye tracking technology. | 4/0/SMP |  |
| 10 | Malik Jackson (2018) | Investigating actions of acid-base chemistry from students’ perspective utilizing eye tracker methodology. | 3/0/SMP |  |
| 9 | Cynthia Shannon  (2018) | A review of transitional health initiatives for incarcerated persons reentering the community. (literature review) | 2/0/SMP | 2nd degree nursing program |
| 8 | Stephen Swanson (2017) | Implementing the next generation science standards into St. Mary's county public schools. | 2/0/SMP | St. Mary’s MAT program, elementary education. |
| 7 | Alexander Rhoades (2017) | An evaluation of a novel tool for teaching the fundamentals and history of atomic theory. | 5/0/SMP |  |
| 6 | Meredith McKissick  (2017) | The long-term efficacy of pharmacological and non-pharmacological therapies in the treatment of attention deficit/hyperactivity disorder in children. (literature review) | 5/0/SMP | Nursing program (UMD) |
| 5 | Ashley Ziur  (2019, ant.) | The development of cross-course collaboration based general chemistry laboratories. | 1/1 |  |
| 4 | Leslie Malick (2017) | Student experiences in a novel, student-centered general chemistry laboratory. | 4/0 |  |
| 3 | Emma Skekel (2017) | Students’ use of general chemistry texts. | 3/0 | Masters, Chemistry, Cornell University (2018) |
| 2 | Leah Dignan  (Fall 2016) | Mass Spectroscopy as a tool in forensic science. | 1/0 | Ph.D., University of Maryland (start 2018) |
| 1 | Ivy Todd  (Fall 2016) | An investigation of St. Mary’s chemistry students perceptions of Hydrogen bonds. | 7/1/SMP |  |

*Undergraduate Student Research Presentations at National Meetings*

Connell,S., Neiles, K. Y. (2019, March (accepted)). Does a targeted intervention utilizing physical manipulatives help students better answer quiz and exam questions on often difficult organic chemistry concepts? Poster will be presented at the 257th American Chemistry Society, National Meeting, Orlando, FL.

Shannon, C., Neiles K.Y., (2018, December). Building a better bridge: Treatment continuity for PLWHA transitioning out of incarceration. Poster presented at National Ryan White Conference, Washington, D.C.

Judd, K., Neiles, K.Y. (2018, August). Investigating student utilization of textbook elements in reaction mechanisms through eye tracking technology. Talk presented at Biennial Conference on Chemical Education, Notre Dame, IN.

Todd, I., Neiles, K.Y. (2016, August). An investigation of chemistry students’ interpretation of instructional materials pertaining to intermolecular forces. Poster presented at Biennial Conference on Chemical Education, Greeley, CO.

Rhoades, A., Neiles, K.Y. (2016, August). Utilizing eye tracking technology to investigate student interactions with general chemistry texts. Poster presented at Biennial Conference on Chemical Education, Greeley, CO.

Todd, I., Neiles, K.Y. (2014, August). A novel approach to measuring students’ mental storage of chemistry information. Biennial Conference on Chemical Education, Allendale, MI.

Grant awards

*Active Grants*

Dillingham, S.L., Wooley, C.A., Mertz, P.S., Neiles, K.Y., Bailey, A.M., Chase, D.T., Koch, A.S., Larsen, R.K., Bowers, G.M., Foster, N.L., Koenig, C.S., Mantell, J.T., Tickle, J.J., Elizabeth, N.W., Brady, A.M., Wick, M.R. Integrating and Scaffolding Research into Undergraduate STEM Curricula: Probing Faculty, Student, Disciplinary, and Institutional Pathways to Transformational Change, NSF *Council on Undergraduate Research Transformation Project*, NSF-DUE Award #1625354, 08/2017-06/2022, ~$8,000.

*Previously Funded Grants*

Neiles, K.Y. Maryland Open Source Textbook initiative. *University of Maryland System, Center for Academic Innovation.* Participated Spring 2014-2016, $1,000.

Neiles, K.Y. John Bohannon Dance Workshop: Communicating Scientific Information Through Dance. *Arts Alliance of St. Mary’s College of Maryland*. Awarded 9/11/15, $250.

*Unfunded Grants*

Neiles, K.Y. (PI for SMCM sub-award). Collaborative Research: Expanding the LibreTexts Libraries into the Next Generation Platform for Active Learning in STEM Education, NSF-TUES award. Submitted 12/10/18. Funds requested for SMCM sub-award: $74,438.

Neiles, K.Y., Dillingham, S.L., Wynn, A.N., Stuller, T., Anna, L.J. Educational Success Through Strong Partnerships: A Maryland Bridges Program in Biomedical and Behavioral Sciences. *NIH Bridges to Baccalaureate Program*, Submitted: 11/2015, Funds Requested: $1,386,069.

Brady, A.M., Byrd, J., Abel, E., Barber, J., Neiles, K.Y. St. Mary’s College of Maryland Pre-Proposal for the Howard Hughes Medical Institute *Inclusive Excellence Grants*. Submitted: 11/30/2015.

Larsen, R.K., Neiles, K.Y. An Educational Research sub-award of vCalc and STEM Ed. Maryland Industrial Partnerships. Submitted: 10/13/2015. Funds Requested: $46,675.

Neiles, K.Y. Enhancing Student Learning of Chemistry Concepts Through Instruction in Science Reading Comprehension and Representational Competency. *NSF CAREER Program,* Submitted: 7/2013, Funds Requested: $420,030.

*Internal Support*

Neiles, K.Y. Faculty Development Grant Proposal 1st Round FY 2017. Travel to the Biennial Conference on Chemical Education. Awarded Spring, 2017. $1,450.

Neiles, K.Y. Transforming the General Chemistry Lab Curriculum to Promote Students’ Acquisition of Process Skills and Vertical Departmental Collaborations. Awarded 11/17/2015. $4,200.

Consulting work

* Reviewer of elementary/middle school textbook science units for Houghton Mifflin Harcourt, Fall 2016-present.
* Program reviewer brought on for expertise in assessment for the Chemistry, Physics, and Geoscience program at Meredith College in Raleigh, NC, 2/23/2016.
* Outside laboratory observer for NSF-TUES award #1323035, *Introduction of a Guided-Inquiry Curriculum in Organic Chemistry by Means of Microwave-assisted Synthesis* at St. Mary’s College of Maryland, 2015-2017.

Professional Development

*Workshops and Conferences*

* Project Kaleidoscope leadership institute, Association of American Colleges & Universities (July 16-21st, 2019). Adamstown, MD.
* Department of Chemistry and Biochemistry Untenured Tea, St. Mary’s College of Maryland, Spring 2017-present.
* IUPUI Assessment Institute (October 21-23rd, 2018). IUPUI, Indianapolis.
* Teaching Excellence Workshop Attendee, St. Mary’s College of Maryland, August 2013- present.
* Service-Learning Course Design: What Faculty Need to Know (January 11th, 2016). University of Maryland, College Park.
* Crossing Boundaries: Transforming STEM Education (November 12th, 2015). Association of American Colleges & Universities. 2015 Network for Academic Renewal STEM Conference: Seattle, Washington.
* Maryland Open Source Textbook Workshop (November 5th, 2013). University of Maryland System: Baltimore, MD.

*Webinars*

* Attendee, AJE Research Author Webinar Series, “Ethics in Research Publication”, October, 2017.
* Attendee, Association of American Colleges and Universities Webinar, “Beyond the “A” Word: Assessment that Empowers Faculty to Take Risks with Pedagogical Innovation, April, 2017.
* Attendee, Association for the Assessment of Learning in Higher Education Webinar, “Show Me the Learning!!”, March, 2017.
* Attendee, Association for the Assessment of Learning in Higher Education Webinar, “Answering Tough Questions: An Approach for Assessment Coordinators/Leaders”, April 2017.
* Attendee, Council on Undergraduate Research Webinar, “CUR Transformations: A Guide to the Project and Pre-Proposal Process”, February, 2017.
* Attendee, Council on Undergraduate Research Webinar, “Achieving an Institution-Wide Culture and Practice in Undergraduate Research: Best Practices from AURA 2016 Awardees”, May, 2016.

professional and academic Service

*Departmental Service:*

* Assessment Coordinator, 2014-present. Created assessment plan with ongoing implementation and maintaining of data.
* SMACS advisor, 2016-present.
* Coordinator of student travel budgetary needs, 2017-present.
* Academic advisor to 35+ students (Fall 2014 – present)
* Search Committee for Department of Chemistry and Biochemistry Lab Coordinator (Fall 2013), visiting Biochemistry professor (Spring 2015), and tenure track Physical Chemist (Fall 2015).

*College Committees:*

* Assessment Implementation Team, 2016-present.
* Rapid Action Task Force (Assessment), Spring 2016.
* College Assessment Committee, 2015-2016.
* NS&M Colloquium (Chemistry and Biochemistry coordinator), 2014-2016.
* Search Committee for Department of Biology tenure track in Animal Physiology (Fall 2015), varsity rowing coach (Summer 2017), and Department of Physics tenure track in Theoretical Physics (Fall 2018).

*Other College Service:*

* Panelist, Writing More Competitive Grant Proposals, Dr. Tom Qenzel and SMCM Faculty Scholars (1/12/18)
* Teaching Excellence Workshop Panelist
* Integrating Undergraduate Research into the Curriculum (with Julie King). (8/17/17)
* Transparent Teaching (8/16)
* Rowing faculty advisor, 2017-present.
* Hawkthon Advisor, 2016-present.
* Dance Club faculty advisor, 2015-present.
* Volleyball faculty advisor, 2016-2017.

*Service to the Field of Chemical Education:*

* Reviewer for Journal of Chemical Education, 2013-present.
* Reviewer for ACS Symposium Series Book Chapter, 2/2018.
* National Science Foundation (NSF) review panelist for grants submitted to the Improving Undergraduate STEM Education (IUSE) program in the Division of Undergraduate Education, 3/2014.

community Service and outreach

* St. Mary’s County Science Fair judge (Spring 2015-2018).
* Maryland STEM Expo and Festival, St. Mary’s County Public Schools (Fall 2016-2018).
* College of Southern Maryland Women & STEM Day (Spring 2015 and 2017).