

Curriculum Vitae – Alan Zollman

Indiana University Southeast (IUS)
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- Current Position: Visiting Faculty in Secondary Education in the School of Education at Indiana University Southeast, New Albany, IN, USA
- Teaching: Undergraduate mathematics; undergraduate introduction to education; undergraduate secondary methods; undergraduate and graduate mathematics education methods at elementary, middle and secondary levels; inservice mathematics education courses; directing Ph.D. candidates studying student learning of mathematics
- Scholarship: Research-based curriculum development at the collegiate, middle and elementary levels, including implementation implications for teachers, students and curricula
- Publications: 40+ International and National Publications, 70+ International and National Presentations
- Leadership: *Past-President* of School Science and Mathematics Association, *Past-Vice President* of the Research Council on Mathematics Learning, *Past-Chair* of the Northern Illinois University's Mathematical Sciences Teacher Education Program, *Past-Chair* of the University of Kentucky's Middle School Certification Program, *Founding President*, Kentucky Association of College Mathematics Educators
- Grant Work: Approximately \$3. M as a consultant, co-principal investigator, principal investigator, or project director, in researching the implementation of STEM Education curriculum innovations with K-12 teachers
- 3 Years Public Schools Teaching Experience: Middle and high school mathematics in Indiana and in Ghana, West Africa (Peace Corps)
- Honors: ICTM's *Max Beberman Mathematics Education Award*;
SSMA's *Outstanding Leadership Award*;
NIU's *Excellence in Undergraduate Teaching Award*;
NIU's Mortar Board National Senior Honor Society *Certificate of Excellence*;
KCTM's *Mathematics Education Service & Achievement Award*

Scholarship

INTERNATIONAL & NATIONAL PUBLICATIONS - Since 2007

1. Murawska, J. & Zollman, A. (2015). Watch your (next) step: Students using inductive reasoning. *Mathematics Teaching in the Middle School*, 20 (7) 417-422. [practitioner journal article]
2. Beynon, K. & Zollman, A. (2015). Lacking a formal concept of limit: Advanced non-mathematics students' personal concept definitions. *Investigations in Mathematics Learning*, 8 (1), 47-62. [research journal article]
3. Zollman, A. (2014). *Starting from scratch: Designing an integrated degree for middle school certification* (pp. 46-50). In M.J. Mohr-Schroeder, M. J. & Harkness, S. S. (Eds.). Proceedings of the 113th annual convention of the School Science and Mathematics Association (Vol. 1). Jacksonville, FL: SSMA. [conference proceedings research paper]
4. Rakes, M. & Zollman, A. (2014). The honors dichotomy: Characterizing students in a US high school honors precalculus class. *The Mathematics Educator*, 15 (2), 30-48. [research journal article]
5. Zollman, A. (2014a). University students' limited knowledge of limits – From calculus through differential equations. In Rogerson, A. (Ed.) *Proceedings of the 12th International Conference of Mathematics Education for the Future Project*. Herceg Novi, Montenegro: The Project. [conference proceedings research paper]
6. Zollman, A. (2014b). Bricks in a field: Research on the learning of calculus. In Berlin, D. F., & White, A. L. (Eds.). *Initiatives in Mathematics and Science Education with Global Implications* (pp. 13-20). Columbus, OH: International Consortium for Research in Science and Mathematics Education. [dissemination of research book chapter]
7. Zollman, A. (2014c). Re-conceptualizing procedural and conceptual knowledge in calculus. In Matney, G. T. and Che, S. M. (Eds.). *Proceedings of the 41th Annual Meeting of the Research Council on Mathematics Learning* (pp. 177-181). San Antonio, TX. [conference proceedings research paper]
8. Patel, R, McCombs, P., & Zollman, A. (2014). Metaphor clusters: A study characterizing instructor metaphorical reasoning on limit concepts in calculus. *School Science and Mathematics*, 114 (5), 236-245. [research journal article]
9. Cappetta, R.W., and Zollman, A. (2013). Agents of change in promoting reflective abstraction: A quasi-experimental study on limits in college calculus. *REDIMAT – Journal of Research in Mathematics Education*, 2 (3), 343-357. doi: 10.4471/redimat.2013.35 [research journal article]

9. Zollman, A. (2012a). Write is right: Using graphic organizers to improve student mathematical problem solving. *Investigations in Mathematics Learning*. 4 (3), 50-60. [research journal article]

10. Zollman, A. (2012b). Learning for STEM literacy: STEM literacy for learning. *School Science and Mathematics*, 112 (1), 12-19. [research journal article]

11. Zollman, A. (2012c). An overview of STEM education projects in the United States: characteristics and concerns. In Reeder, S. L., (Ed.) *Proceedings of the 39th Annual Meeting of the Research Council on Mathematics Learning* (pp. 116-120). Charlotte, NC: The Council. [conference proceedings research paper]

12. Zollman, A., Tahernezehadi, M., & Billman, P. (2012). Science, technology, engineering and mathematics education in the United States: Areas of current successes and future needs. *International Journal of Science in Society*. 3 (2), 103-112. [research journal article]

13. Zollman, A. (2011a). The use of graphic organizers to improve students and teachers problem solving skills and abilities. In Padwig, L., & Rogerson, A. (Eds.) *Proceedings of the 11th International Conference of Mathematics Education into the 21st Century Project*. (pp. 381-384). Rhodes University, Grahamstown, South Africa: Oxford University Press. [conference proceedings research paper]

14. Zollman, A. (2011b). Write is right: Using graphic organizers to improve mathematical problem solving. In Reeder, S. L., (Ed.) *Proceedings of the 38th Annual Meeting of the Research Council on Mathematics Learning*. (pp. 76-83). Cincinnati, OH: The Council. [conference proceedings research paper]

15. Zollman, A. (2011c). Is STEM misspelled? *School Science and Mathematics*. 111 (5), 197-198. [invited editorial]

16. Zollman, A., Smith, M.C., & Reisdorf, P. (2011). Identity formation: Critical component in mathematics. In Brahier, D., (Ed.) *Seventy-Third Yearbook Motivation and Disposition: Pathways to Learning Mathematics*. (pp. 43-53). Reston, VA: National Council of Teachers of Mathematics. [practitioner book chapter]

17. Zollman, A., Tahernezehadi, M., Shaw, C., Kitts, K., Billman, P., Cesarotti, D., Falk-Ross, F., Rahn, R., Smith M C., Haji-Sheikh, M., Majumdar, P., Merrill, J., & Kullens, J. (2011). Teacher as engineer, researcher, leader: An interdisciplinary, synergetic degree to advance science, technology, engineering, and mathematics (STEM). In Berlin, D. F., & White, A. L. (Eds.). *Science and Mathematics Education: International Innovations, Research, and Practices*. (pp. 251-263). Columbus, OH: International Consortium for Research in Science and Mathematics Education. [research book chapter]

18. Kulm, G., Zollman, A., Thomas, J., Cooper, S. (2010). A new decade: A new step forward for the Journal. *School Science and Mathematics, 110* (1), 3-4. [invited editorial]
19. Zollman, A. (2010a). Problem solving for the 21st century: Back to the future or forward to the past. In Sriraman, B., & English, L., (Eds.) *Theories of Mathematics Education: Seeking New Frontiers*. (pp. 297-301). New York, NY: Springer. [research book chapter commentary]
20. Zollman, A., (2010b). Defining college readiness. *School Science and Mathematics Association Math-Science Connector Newsletter*, 5-6. [invited editorial]
21. Cappetta, R.W., & Zollman, A. (2009). Creating a discourse-rich classroom on the concept of limits in calculus: Initiating shifts in discourse to promote reflective abstraction. In Knott, L., (Ed.) *The Role of Mathematics Discourse in Producing Leaders of Discourse*. (pp. 17-39). Charlotte, NC: Information Age Publishing. [research book chapter]
22. Zollman, A. (2009a). Mathematical graphic organizers. *Teaching Children Mathematics, 16* (4), 222-229. [practitioner journal article]
23. Zollman A. (2009b). Students use graphic organizers to improve problem-solving communications. *Middle School Journal, 41* (3), 4-12. [practitioner journal article]
24. Zollman, A., Kitts, K., Tahernezehadi, M., & Billman, P. (2009). Synergy for science learning: An interdisciplinary partnership to improve the quality of science, technology, engineering, and mathematics education. *International Journal of Science in Society, 1* (3), 147-152. [research journal article]
25. Zollman, A. (2008a). Less is more: Using mathematical conceptual principles and procedural themes with elementary education majors. *The Mathematics Educator, 11* (1&2), 33-46. [research journal article]
26. Zollman, A. (2008b). Revising the needs of the gifted mathematics students: Are students surviving or thriving? In Sriraman, B., (Ed.) *Creativity, Giftedness, and Talent Development in Mathematics*. (pp. 277-286). Charlotte, NC: Information Age Publishing. Reprint of Zollman, A. (2007). Revisiting the needs of the gifted mathematics students: Are students surviving or thriving? *Mediterranean Journal for Research in Mathematics Education, 6* (1&2), 139–148. [research book chapter]
27. Zollman, A. (2007a). Teaching for profound understanding: A study using mathematical connections with preservice elementary education majors. In Berlin, D. F., & White, A. L. (Eds.). *Global Issues, Challenges, and Opportunities to Advance Science and Mathematics Education*. (pp. 287-304). Columbus, OH: International Consortium for Research in Science and Mathematics Education. [research book chapter]

28. Zollman, A. (2007b). Revisiting the needs of the gifted mathematics students: Are students surviving or thriving? *Mediterranean Journal for Research in Mathematics Education*, 6 (1&2), 139-148. [research journal article]

REFEREED INTERNATIONAL & NATIONAL PRESENTATIONS - Since 2007

1. Zollman, A. (2015, February 27th). *Co-teaching strategies with pre-service teachers to meet InTASC Standards*. To be presented at the 42th Annual Meeting of the Research Council on Mathematics Learning. Las Vegas, NV. [research presentation]
2. Zollman, A. (2014, November 7th). *Starting from scratch: Designing an integrated degree for middle school certification*. Presented at the 113th Annual Convention of the School Science and Mathematics Association. Jacksonville, FL. [research presentation]
3. Zollman, A. (2014, September 25th). *University students' limited knowledge of limits – from calculus through differential equations*. Presented at the 12th International Conference of Mathematics Education for the Future Project. Herceg Novi, Montenegro. [research presentation]
4. Zollman, A. (2014, February 28th). *Re-conceptualizing procedural and conceptual knowledge in calculus*. Presented at the 41th Annual Meeting of the Research Council on Mathematics Learning. San Antonio, TX. [research presentation]
5. Zollman, A. (2013, November 15th). *Functions, Limits, Continuity and Derivatives: Hierarchy for Conceptual Understanding in Calculus*. Presented at the 112th Annual Convention of the School Science and Mathematics Association. San Antonio, TX. [research presentation]
6. Zollman, A. (2013, March 2nd). *Bricks in a field: Research on the learning of calculus*. Presented at the 40th Annual Meeting of the Research Council on Mathematics Learning. Tulsa, OK. [research presentation]
7. Zollman, A. (2013, March 14th). *Research on the learning of calculus: Building a cohesive knowledge depository*. Presented at the 2013 Consultation of the International Consortium for Research in Science and Mathematics Education, Nicaragua. [research presentation]
8. Zollman, A. (2012, February 24th). *An overview of STEM education projects in the United States: Characteristics and concerns*. Presented at the 39th Annual Meeting of the Research Council on Mathematics Learning. Charlotte, NC. [research presentation]
9. Zollman, A., Tahernezehadi, M., & Billman, P. (2012, April 19th). *STEM teachers as engineers of learning*. U.S. Department of Education's Mathematics and Science Partnerships Program Conference. Chicago, IL. [research presentation]

10. Zollman, A. (2012, November 15th). *The 3 S's for success: STEM education projects in the U.S.* Presented at the 111th Annual Convention of the School Science and Mathematics Association. Birmingham, AL. [research presentation]
11. Zollman, A. (2011, June 2nd). *Learning for STEM literacy: STEM literacy for learning.* Presented at the University of Oklahoma. Norman, OK. [invited research colloquium]
12. Zollman, A. (2011, June 3rd). *Defining college readiness: Bridging the disconnect between high school achievement and college expectations.* Presented at Oklahoma State University. Stillwater, OK. [invited research colloquium]
13. Zollman, A. (2011, March 11th). *Write is right: Students using graphic organizers to improve their problem-solving skills and abilities.* Presented at the 38th Annual Meeting of the Research Council on Mathematics Learning. Cincinnati, OH. [research presentation]
14. Zollman, A. (2011, August 6th). *STEM (Science, Technology, Engineering and Mathematics) education in the United States: Areas of current successes and future needs.* Presented at the 3rd International Conference on Science in Society. Washington DC. [research presentation]
15. Zollman, A. (2011, September 15th). *The use of graphic organizers to improve student and teachers problem-solving skills and abilities.* Presented at the Eleventh International Conference Mathematics Education into the 21st Century. Grahamstown, South Africa. [research presentation]
16. Zollman, A. (2011, November 12th). *Learning for STEM literacy: STEM literacy for learning.* Presented at the 110th Annual Convention of the School Science and Mathematics Association. Colorado Springs, CO. [research presentation]
17. Zollman, A. (2010, March 12th). *Striving for synergy: An interdisciplinary partnership to improve STEM Education.* International Consortium for Research in Science and Mathematics Education XIII. La Manzanilla, Mexico. [research presentation]
18. Zollman, A. (2010, April 22nd). *Fixing 27 common Myth-Takes of 23 Myth-Conception.* Presented at the Annual Conference of the National Council of Teachers of Mathematics. San Diego, CA. [practitioner presentation]
19. Shemale, S., and Zollman, A. (2010, November 4th). *An Assessment of Error Patterns of College Students in Trigonometry.* Presented at the 109th Annual Convention of the School Science and Mathematics Association. Ft. Myers, FL. [research presentation]
20. Patel, R., McCombs, P., Wangle, J. and Zollman, A. (2010, November 5th). *Metaphor clusters: A study characterizing instructor metaphorical reasoning on limit concepts in calculus.* Presented at the 109th Annual Convention of the School Science and Mathematics Association. Ft. Myers, FL. [research presentation]

21. Zollman, A. (2010, November 5th). *Calling for ID: the overlooked component of identity development for mathematics achievement*. Presented at the 109th Annual Convention of the School Science and Mathematics Association. Ft. Myers, FL. [research presentation]
22. Zollman, A. (2009, October 23rd). *Identity Formation and Possible Selves: Becoming a Self-Regulated Learner in Mathematics* Presented at the 108th Annual Convention of the School Science and Mathematics Association. Reno, NV. [research presentation]
23. Zollman, A. (2009, April 24th). *Adolescent Identity Formation, Mathematics Content, Reflective-Abstraction Initiates Synergy: Combined Results Greater than Individual Effects*. Presented at the Annual Conference of the National Council of Teachers of Mathematics. Washington, DC. [research presentation]
24. Zollman, A. (2009, August 6th). *Synergy for Science Learning: An Interdisciplinary Partnership to Improve the Quality of Science, Technology, Engineering, and Mathematics (STEM) Education*. Virtually presented at the Science in Society Conference - University of Cambridge, UK. [research presentation]
25. Zollman, A. (2009, March 6th). *Teacher as Engineer/Researcher/Leader: Enhancing STEM Education*. Presented at the 36th Annual Conference of the Research Council on Mathematics Learning. Rome, GA. [research presentation]
26. Zollman, A. (2009, October 23rd). *Identity Formation and Possible Selves: Becoming a Self-Regulated Learner in Mathematics* Presented at the 108th Annual Convention of the School Science and Mathematics Association. Reno, NV. [research presentation]
27. Zollman, A., Bheda, M.J. (2009, October 22nd). *ITEAMS - Integrated Technology & Engineering to Advance Mathematics and Science* (Poster Presentation). Presented at the 108th Annual Convention of the School Science and Mathematics Association. Reno, NV. [research presentation]
28. Zollman, A. (2009, April 24th). *Adolescent Identity Formation, Mathematics Content, Reflective-Abstraction Initiates Synergy: Combined Results Greater than Individual Effects*. Presented at the Annual Conference of the National Council of Teachers of Mathematics. Washington, DC. [research presentation]
29. Zollman, A. (2009, August 6th). *Synergy for Science Learning: An Interdisciplinary Partnership to Improve the Quality of Science, Technology, Engineering, and Mathematics (STEM) Education*. Virtually presented at the Science in Society Conference - University of Cambridge, UK. [research presentation]
30. Zollman, A. (2009, March 6th). *Teacher as Engineer/Researcher/Leader: Enhancing STEM Education*. Presented at the 36th Annual Conference of the Research Council on Mathematics Learning. Rome, GA. [research presentation]

31. Zollman, A. (2007, November 19th). *Teachers Seeking Wisdom: Correlations of Teachers' Lessons to State Curriculum & Tests*. Presented at the 106th Annual Conference of the School Science and Mathematics Association. Indianapolis, IN. [research presentation]

Grants

Worked as a consultant, co-principal investigator, principal investigator, or project director, on approximately \$3. M in researching the implementation of STEM education curriculum innovations with K-12 teachers from:

- Martha Holden Jennings's Foundation*
- United States Department of Education*
- American Educational Research Association*
- Eisenhower Mathematics and Science Education Act*

Twenty university grants totaling approximately \$30,000.

Addenda

- Served on the monograph writing teams for 5 state standards and curriculum frameworks
- Presented 90+ national workshops for 15,000 school mathematics teachers in 29 states
- Given 20+ conference keynote addresses
- Presented at 20+ mathematics education regional meetings
- Presented at 50+ mathematics education state meetings
- Presented 40+ local mathematics education workshops
- Presented 20+ preservice teacher mathematics education workshops

Educational Background

Indiana University Bloomington, IN

Ph.D., *Aspects of Transfer of Learning in Mathematical Problem Solving with respect to the Order of Problem Presentation*

Indiana University Bloomington, IN

Masters of Arts for Teachers - Mathematics

Indiana University Bloomington, IN

Bachelor of Science – Mathematics, with Indiana Secondary School Teaching Certification

Professional Experience

University

Northern Illinois University	DeKalb, IL	Associate Professor of Mathematics Education
Northern Illinois University	DeKalb, IL	Assistant Professor of Mathematics Education
University of Kentucky	Lexington, KY	Assistant Professor of Curriculum & Instruction

Public School Teaching

Floyd County Public Schools	New Albany, IN	Middle School Mathematics Teacher
United States Peace Corps	Bibiani, GHANA	Secondary School Mathematics Teacher

Teaching

Taught the undergraduate courses: *Examining Oneself as a Teacher, General Methods of Senior High/Junior High/Middle School Teachers, Laboratory/Field Experience, Methods of Instruction in the Mathematics Curriculum for the Elementary School (K-6), Foundations of Elementary School Mathematics, Calculus I, Methods of Instruction in the Mathematics Curriculum For Grades 6-12, Methods of Instruction in the Mathematics Curriculum For the Middle School* (30+ undergraduate courses since 2007)

Taught the graduate courses: *Theoretical Foundations of Mathematics Education, Topics in Mathematics Education – Problems in Calculus Learning, Topics in Mathematics Education – Learning and Teaching, Topics in Mathematics Education – Curriculum and Evaluation, Assessment and Evaluation in School Mathematics, Introduction of Mathematics Education Research, Topics in Contemporary Mathematics Education, The Learning and Teaching of Algebra, Seminar in Mathematics Education* (10+ graduate courses since 2007)

Served as an undergraduate course coordinator: *Methods of Instruction in the Mathematics Curriculum for the Elementary School, Foundations of Elementary School Mathematics* (20+ times)

Professional Distinctions

AWARDS

- Illinois Council of Teachers of Mathematics *Max Beberman Math Education Award*, 2014
- School Science and Mathematics Association, *Outstanding Leadership Award*, 2011
- Northern Illinois University's *Excellence in Undergraduate Teaching Award*, 2005
- NIU's Mortar Board National Senior Honor Society *Certificate of Excellence*, 1998
- Kentucky Council of Teachers of Mathematics *Math Ed Service & Achievement Award*, 1992

LEADERSHIP - NATIONAL

- *Past-President & Board Member*, School Science and Mathematics Association, 2010-11
- *President*, School Science and Mathematics Association, 2008-10
- *President-Elect & Board Member*, School Science and Mathematics Association, 2007-08
- *Publications Chair*, School Science and Mathematics Association, 2003-06
- *Director-at-Large*, School Science and Mathematics Association, 2003-06
- *Vice President – Publications*, Research Council on Mathematics Learning, 2003-05

LEADERSHIP – UNIVERSITY

- *Co-Chair - Middle Level Teaching and Learning*, Northern Illinois University, 2013-present
- *Chair - Teacher Education Committee*, NIU Department of Mathematical Sciences, 2002-05
- *Chair - Middle School Certification Program*, University of Kentucky, 1988-89

LEADERSHIP - STATE

- *Board of Directors*, Illinois Mathematics Teacher Educators. 2002-05
- *Founding President*, Kentucky Association of College Mathematics Educators, 1991-93
- *Vice President*, Kentucky Council of Teachers of Mathematics, 1988-89

EDITORIAL BOARDS

- *Editorial Board*, *Investigations in Mathematics Learning*, 2008-present
- *Editorial Board*, *International Journal of Science in Society*, 2009-2012
- *Editorial Board*, *Focus on Learning Problems in Mathematics*, 2003-08

CHAIR OF DISSERTATION COMMITTEES

- Paul McCombs, *Analysis of Second Semester Calculus Student Understanding of Series and Series Convergence*. 12/10/13. (CHAIR)
- Jayleen Wangle, *Calculus Student Understanding of Continuity*. 10/22/13. (CHAIR)
- Rita Patel, *Derivative and Pre-Derivative Concepts and Attitudes Toward Mathematics*. 10/25/13. (CO-CHAIR)
- Robert Cappetta, *Reflective Abstraction And The Concept Of Limit: A Quasi-Experimental Study To Improve Student Performance In College Calculus By Promoting Reflective Abstraction Through Individual, Peer, Instructor And Curricular Initiates*. 7/9/07. (CHAIR)
- Bharath Sriraman, *A Grounded-Research Qualitative Study of Ninth Grade Students' Generalization Processes in Combinatorial Problem-Solving Items with Connections to Mathematical Creativity*. 4/12/02. (CO-CHAIR)