

Dr. Karl Kosko

Assistant Professor
TLC
kkosko1@kent.edu

Education

Ph.D., Curriculum & Instruction	2010
Virginia Tech <i>Mathematical Discussion and Self-Determination Theory</i>	
M.Ed., Middle Level Education	2005
Winthrop University	
B.S., Elementary Education	2002
Winthrop University <i>Currently hold equivalent course background for a bachelors in mathematics.</i>	

Higher Education Work Experience

Assistant Professor	8/2012 - present
Kent State University	
Post Doctoral Fellow	7/2010 - 8/2012
University of Michigan	
Teacher Education Supervisor	8/2006 - 5/2009
Virginia Tech	

Other Professional Experience

Teacher	8/2002 - 6/2006
Rock Hill, SC	

Publications

- Kosko, K. W., & Wilkins, J. L. M. (In press). Does time matter in improving mathematical discussions? The influence of mathematical autonomy. *Journal of Experimental Education*. 2015
Publication: *Journal Articles*
- Kosko, K. W. (in press). Geometry students' self-determination and their engagement in mathematical whole class discussion. *Investigations in Mathematics Learning*. 2015
Publication: *Journal Articles*
- Chieu, V. M. C., Kosko, K. W., & Herbst, P. (2015). An analysis of evaluative comments in teachers' online discussions of representations of practice. *Journal of Teacher Education*, 66(1), 35-50. 2015
Publication: *Journal Articles*
- Kosko, K. W., & Gao, Y. (In press). Mathematical communication in state standards before the Common Core. *Educational Policy*. 2015
Publication: *Journal Articles*
- Herbst, P., & Kosko, K. W. (2014). Mathematical knowledge for teaching and its specificity to high school geometry instruction. In J. Lo, K. R. Leatham, & L. R. Van Zoest (Eds.), *Research trends in mathematics teacher education* (pp. 23-46). New York: Springer 2014
Publication: *Book Chapters*
- Kosko, K. W., McMahon, L., & Amiruzzaman, M. (2014). Few in number: Research on mathematical teaching and learning in the online setting. In R. E. Ferdig & K. Kennedy (Eds.), *Handbook of research on K-12 online and blended learning* (pp. 163-178). ETC Press. Retrieved at: http://press.etc.cmu.edu/files/Handbook-Blended-Learning_Ferdig-Kennedy-etal_web.pdf 2014
Publication: *Book Chapters*
- Kosko, K. W., & Gao, Y. (2014). Perceptions and reality: One teacher's use of prompts in mathematical discussions. In P. Liljedahl, S. Oesterle, C. Nicol, & D. Allan (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36* (Vol. 4, pp. 41-48), Vancouver, Canada: PME. 2014
Publication: *Conference Proceedings, Refereed*
- Erickson, A. W., Herbst, P., Dimmel, J., Kosko, K., & Koh, I. (2014). Mathematics teachers' recognition of an obligation to the discipline and its role in the justification of instructional actions. In P. Liljedahl, S. Oesterle, C. Nicol, & D. Allan (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36* (Vol. 3, pp. 273-280), Vancouver, Canada: PME. 2014
Publication: *Conference Proceedings, Refereed*
- Kosko, K. W. (2014). Using multi-decision scenarios to facilitate teacher knowledge for mathematical questioning. In M. J. Mohr-Schroeder & S. S. Harkness (Eds.), *Proceedings of the 113th annual convention of the School Science and Mathematics Association* (pp. 23-30). Jacksonville, FL: SSMA. 2014
Publication: *Conference Proceedings, Refereed*
- Herbst, P. G., & Kosko, K. W. (2014). Using representations of practice to elicit mathematics teachers' tacit knowledge of practice: A comparison of responses to animations and videos. *Journal of Mathematics Teacher Education*, 17(6), 515-537 2014
Publication: *Journal of Mathematics Teacher Education*

Publication: *Journal Articles*

Kosko, K. W., Rougee, A., & Herbst, P. (2014). What actions do teachers envision when asked to facilitate mathematical argumentation in the classroom? *Mathematics Education Research Journal*, 26(3), 459-476. 2014

Publication: *Journal Articles*

Kosko, K. W. (2014). What students say about their mathematical thinking when they listen. *School Science and Mathematics*, 114(5), 214-223. 2014

Publication: *Journal Articles*

Herbst, P., Kosko, K. W., & Dimmel, J. (2013). How are geometric proof problems presented? Conceptualizing and measuring teachers' recognition of the diagrammatic register. In A. C. Superfine, M. Martinez, G. Larnell, T. Stoelinga, & D. Martin (Eds.), *Proceedings of the 35th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 179-186), Chicago, IL: University of Illinois at Chicago. Available at: <http://141.213.232.243/bitstream/handle/2027.42/97761/Diagrammatic%20Register-PMENA2013.pdf?sequence=1> 2013

Publication: *Conference Proceedings, Refereed*

Kosko, K. W. (2013). Teacher questioning: Does MKT and supporting student autonomy predict it? In A. C. Superfine, M. Martinez, G. Larnell, T. Stoelinga, & D. Martin (Eds.), *Proceedings of the 35th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1057-1060), Chicago, IL: University of Illinois at Chicago. 2013

Publication: *Conference Proceedings, Refereed*

Kosko, K. W., & Herbst, P. (2012). Evaluating teachers' decisions in posing a proof problem. In L. R. Van Zoest, J. J. Lo, & J. L. Kratky (Eds.), *Proceedings of the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 813-820), Kalamazoo, MI: Western Michigan University. Available at: <http://hdl.handle.net/2027.42/91282> 2012

Publication: *Conference Proceedings, Refereed*

Herbst, P., & Kosko, K. W. (2012). Mathematical knowledge for teaching high school geometry. In L. R. Van Zoest, J. J. Lo, & J. L. Kratky (Eds.), *Proceedings of the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 438-444), Kalamazoo, MI: Western Michigan University. Available at: <http://hdl.handle.net/2027.42/91279> 2012

Publication: *Conference Proceedings, Refereed*

Kosko, K. W. (2012). Mathematical listening: Self-reports of how students listen and its relation to engagement in mathematical discussion. In L. R. Van Zoest, J. J. Lo, & J. L. Kratky (Eds.), *Proceedings of the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 351-354), Kalamazoo, MI: Western Michigan University. 2012

Publication: *Conference Proceedings, Refereed*

Kosko, K. W. (2012). Geometry students' hedged statements and their self-regulation of mathematics. *Journal of Mathematical Behavior*, 31(4), 489-499. 2012

Publication: *Journal Articles*

Kosko, K. W., & Norton, A. (2012). Relationships between the process standards: Process elicited through letter writing between preservice teachers and high school mathematics students *School Science and Mathematics*, 112(6), 340-348. 2012

Publication: *Journal Articles*

Kosko, K. W., & Miyazaki, Y. (2012). The effect of student discussion frequency on fifth-grade students' mathematics achievement in U.S. schools. *The Journal of Experimental Education*, 80(2), 173-195. 2012

Publication: *Journal Articles*

Kosko, K. W., & Herbst, P. G. (2012). A deeper look at how teachers say what they say: A quantitative modality analysis of teacher-to-teacher talk. *Teaching and Teacher Education*, 28(4), 589-598. 2012

Publication: *Journal Articles*

Kosko, K. W., & Wilkins, J. L. M. (2012). Students' quality of mathematical discussion and their self-determination in mathematics. *Investigations in Mathematics Learning*, 4(3), 15-30. 2012

Publication: *Journal Articles*

Kosko, K. W. (2012). Student enrollment in classes with frequent mathematical discussion and its longitudinal effect on mathematics achievement. *The Mathematics Enthusiast*, 9(1&2), 111-148. 2012

Publication: *Journal Articles*

Kosko, K. W., & Herbst, P. G. (2011). Where's the proof? Proof in U.S. high school geometry content standards. In L. R. Wiest, & T. Lamberg (Eds.), *Proceedings of the 33rd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 329-337), Reno, NV: University of Nevada, Reno. 2011

Publication: *Conference Proceedings, Refereed*

Kosko, K. W., & Wilkins, J. L. M. (2011). Communicating quantitative literacy: An examination of open-ended assessment items in TIMSS, NALS, IALS, and PISA. *Numeracy*, 4(2). Retrieved from <http://services.bepress.com/numeracy/vol4/iss2/art3> 2011

Publication: *Journal Articles*

Kosko, K. W., Norton, A., Conn, A., & San Pedro, J. M. (2010). Letter writing: Providing preservice teachers with experience in posing appropriate mathematical tasks to high school students. In J.W. Lott, & J. Luebeck (Eds.) *Association of Mathematics Teacher Educators Monograph 7: Mathematics teaching: Putting research into practice at all levels* (pp. 207-224). Association of Mathematics Teacher Educators: San Diego, CA. 2010

Publication: *Book Chapters*

Kosko, K. W., & Wilkins, J. L. M. (2010). Communicating quantitative literacy. In P. Brosnan, D. Erchick, & L. Flevares (Eds.), *Proceedings of the 32nd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 345-353). Columbus, OH: The Ohio State University. 2010

Publication: *Conference Proceedings, Refereed*

Kosko, K. W. (2010). Student-reported listening in mathematical discussion. In P. Brosnan, D. Erchick, & L. Flevares (Eds.), *Proceedings of the 32nd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (p. 460). Columbus, OH: The Ohio State University. 2010

Publication: *Conference Proceedings, Refereed*

- Kosko, K. W., & Wilkins, J. L. M. (2010). Mathematical communication and its relation to the frequency of manipulative use. *International Electronic Journal of Mathematics Education*, 5(2), 79-90. Retrieved from <http://www.iejme.com/022010/d3.pdf> 2010
Publication: *Journal Articles*
- Kosko, K. W., & Miyazaki, Y. (2009). Compound effects of mathematics discussion on fifth grade math achievement. In S. L. Swars, D. W. Stinson, & S. Lemons-Smith (Eds.) *Proceedings of the 31st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 284-287). Atlanta, GA: Georgia State University. 2009
Publication: *Conference Proceedings, Refereed*
- Austin, J. E., Cameron, T. L., Glass, M., Kosko, K., Marsh, F., Abdelmajid, R., & Burge, P. (2009). First semester experiences of professionals transitioning to full-time doctoral study. *The College Student Affairs Journal*, 27(2), 194 – 214. 2009
Publication: *Journal Articles*
- Kosko, K. W., & Wilkins, J. L. M. (2009). General educators' inservice training and their self-perceived ability to adapt instruction for special needs students. *The Professional Educator*, 33(2). Retrieved from http://www.theprofessionaleducator.org/articles/Kosko_final.pdf 2009
Publication: *Journal Articles*
- Kosko, K. W., Wilkins, J. L. M., & Pitts Bannister, V. R. (2009). Writing sophistication in students answers to algebraic questions. *The MathMate*, 33 (1), 18-22. 2009
Publication: *Journal Articles*
- Brandt, C. B., & Kosko, K. (2008). The power of the earth is a circle: Indigenous science education in North America. In K. Tobin & W.M. Roth (Eds.), *The World of Science Education: Handbook of Research in North America* (pp. 389 – 408), Rotterdam: Sense Publishers. 2008
Publication: *Book Chapters*

Presentations

- Erickson, A. W., Herbst, P., Dimmel, J., **Kosko, K.**, & Koh, I. (July 2014). *Mathematics teachers' recognition of an obligation to the discipline and its role in the justification of instructional actions*. Research report presented at the combined meeting for the 38th annual meeting of the International Group for the Psychology of Mathematics Education and 36th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Vancouver, Canada. 2014
Type: *International Refereed*
- Kosko, K. W.**, & Gao, Y. (2014). *Perceptions and reality: One teacher's use of prompts in mathematical discussions*. Research report presented at the combined meeting for the 38th annual meeting of the International Group for the Psychology of Mathematics Education and 36th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Vancouver, Canada. 2014
Type: *International Refereed*
- Kosko, K. W. (May, 2014). *Mathematical writing: An exploratory study of one concrete operational child's mathematical descriptions*. Research report presented at the 44th Annual Meeting of the Jean Piaget Society, San Francisco, CA. 2014
Type: *National Refereed*

- Estapa, A., Amador, J., Aming-Attai, R., de Araujo, Z., Kosko, K., & Weston, T. (February, 2014). *Noticing in action: An animated look into the noticing of future elementary teachers*. Poster presented at Association of Mathematics Teacher Educators 2014 Conference Presession, Irvine, CA. 2014
Type: *National Non-Refereed*
- Kosko, K., Rogers, K., & Taylor, M. (February, 2014). *What's in a task? How K-16 mathematics teachers attend to the standard for mathematical practice #3* Poster presented at Association of Mathematics Teacher Educators 2014 Conference Presession, Irvine, CA. 2014
Type: *National Non-Refereed*
- Kosko, K. W. (November, 2013). *Teacher questioning: Does MKT and supporting student autonomy predict it?* Brief research report to be presented at the 35th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Chicago, IL. 2013
Type: *International Refereed*
- Herbst, P. G., Kosko, K. W., & Dimmel, J. K. (November, 2013). *How are geometric proof problems presented? Conceptualizing and measuring teachers' recognition of the diagrammatic registre?* Research report to be presented at the 35th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Chicago, IL. 2013
Type: *International Refereed*
- Kosko, K. W., & Herbst, P. G. (April, 2013). *Opening opportunities for discourse in the face of norms for posing proof problems*. Round table paper presented at the 2013 Annual Meeting of the American Educational Research Association, Division C, San Francisco, CA. 2013
Type: *National Refereed*
- Kosko, K. W., Rougee, A., & Herbst, P. G. (April, 2013). *What actions do teachers envision when asked to facilitate mathematical argumentation in the classroom?* Round table paper presented at the 2013 Annual Meeting of the American Educational Research Association, Division C, San Francisco, CA. 2013
Type: *National Refereed*
- Herbst, P., Chazan, D., Kosko, K. W., Aaron, W., Dimmel, J., Buchbinder, O., & Erickson, A. W. (April, 2013). *Methods to study decisions in mathematics teaching*. Research symposium presented at the National Council of Teachers of Mathematics Research Presession, Denver, CO. 2013
Type: *National Refereed*
- Kosko, K. W., & Chieu, V. M. (April, 2013). *Piloting online professional development for facilitating the Common Core*. Interactive paper presented at the National Council of Teachers of Mathematics Research Presession, Denver, CO. 2013
Type: *National Refereed*
- Kosko, K. W., & Herbst, P. (October, 2012). *Evaluating teachers' decisions in posing a proof problem* Research report presented at the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Kalamazoo, MI. 2012
Type: *International Refereed*

Herbst, P., & Kosko, K. W. (October, 2012). *Mathematical knowledge for teaching high school geometry*. Research report presented at the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Kalamazoo, MI. 2012
Type: *International Refereed*

Kosko, K. W. (October, 2012). *Mathematical listening: Self-reports of how students listen and its relation to engagement in mathematical discussion*. Research brief presented at the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Kalamazoo, MI. 2012
Type: *International Refereed*

Grants

PI, Making mathematics mobile (M3): Collaborating with K-12 schools to explore mathematics apps 2014 - 2015
A project to create a resource for teachers and other stakeholders to locate and evaluate effective mobile applications for mathematics learning and instruction.
Collaboration with: Kosko, K. W., & Ferdig, R. E.
Awarded: \$30,725.00 (0 0)
Martha Jennings Holden Foundation - Service

PI, More than numbers: Developing a mathematical writing intervention for children. 2014 - 2016
Engaging children in the practice of mathematical writing is often advocated but seldom implemented in the classroom. This project seeks to develop and validate an intervention using mathematical writing. The limited research regarding mathematical writing has demonstrated significant and large effects in improving students' mathematical learning. The study will take place over two years and include two phases of research. Phase One will focus on the development of the intervention while Phase Two will assess the statistical effect of the intervention in the classroom. Results will expand the field's understanding of the nature and implementation of mathematical writing.
Collaboration with: Karl W. Kosko
Awarded: \$5,000.00 (2 2014)
Kent State University - College of Education, Health and Human Services - Basic Research