

## Karl W. Kosko

401 White Hall, P.O. Box 5190

Kent, OH 44242

Office: (330) 672 - 0660

kkosko1@kent.edu

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## EDUCATION

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### Virginia Tech, Blacksburg, VA

Ph.D., Curriculum & Instruction: Mathematics Education, May 2010

Dissertation Title: Mathematical Discussion and Self-Determination Theory

Advisor: Jesse L. M. Wilkins

### Winthrop University, Rock Hill, SC

M.Ed., Middle Level Education / Concentration in Mathematics, December 2005

B.S., Elementary Education / Mathematics Minor, May 2002

- Hold equivalent course background to a Bachelors in Mathematics.

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## RESEARCH

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### Journal Articles (Peer Reviewed)

Amador, J., Kosko, K. W., Estapa, A., & Weston, T. (in press). Prospective teachers' appraisals of technology platforms: Comparing perception and complexity. *Technology, Pedagogy, and Education*.

Amador, J., Estapa, A., Kosko, K., & Weston, T. (in press). Prospective teachers' noticing and mathematical decisions to respond: Using technology to approximate practice. *International Journal of Mathematical Education in Science and Technology*.

Ferdig, R. E., & Kosko, K. W. (in press) Implementing 360 video to increase immersion, perceptual capacity, and teacher noticing. *TechTrends*.

Kosko, K. W. (in press). Using arrays for meaningful multiplication. *Mathematics Teacher: Learning and Teaching Pre-K-12*.

Kosko, K. W. (in press). The multiplicative meaning conveyed by visual representations. *Journal of Mathematical Behavior*.

Kosko, K. W., Ferdig, R. E., & Zolfaghari, M. (in press). Preservice teachers' professional noticing when viewing standard and 360 video. *Journal of Teacher Education*.

- Zolfaghari, M., Austin, C. K., Kosko, K., & Ferdig, R. E. (2020). Creating asynchronous virtual field experiences with 360 video. *Journal of Technology and Teacher Education*, 28(2), 315-320.
- Kosko, K. W. (2019). A multiplicative reasoning assessment for fourth and fifth grade students. *Studies in Educational Evaluation* (60), 32-42.
- Kosko, K. W. (2019). Third grade teachers' self-reported use of multiplication and division models. *School Science and Mathematics*, 119(5), 262-274.
- Kosko, K. W., & Singh, R. (2019). Children's coordination of linguistic and numeric units in mathematical argumentative writing. *International Electronic Journal of Mathematics Education*, 14(2), 275-291.
- Kosko, K. W., & Zimmerman, B. (2019). Emergence of argument in children's mathematical writing. *Journal of Early Childhood Literacy*, 19(1), 82-106.
- Rogers, K. C., & Kosko, K. W. (2019). How elementary and collegiate instructors envision tasks as supportive of mathematical argumentation: A comparison of instructors' task constructions. *Journal of Mathematical Behavior*, 53, 228-241.
- Estapa, A., Amador, J., Kosko, K. W., Weston, T., de Araujo, Z., & Aming-Attai, R. (2018). Preservice teachers' articulated noticing through pedagogies of practice. *Journal of Mathematics Teacher Education*, 21(4), 387-415.
- Kosko, K. W. (2018). Reconsidering the role of disembedding in multiplicative concepts: Extending theory from the process of developing a quantitative measure. *Investigations in Mathematics Learning*, 10(1), 54-65.
- Kosko, K. W., & Guilford, E. (2018). Making students' mathematical arguments explicit. *Ohio Journal of School Mathematics*, 80, 43-50.
- Kosko, K. W., & Singh, R. (2018). Elementary children's multiplicative reasoning: Initial validation of a written assessment. *The Mathematics Educator*, 27(1), 3-22.
- Kosko, K. W., & Singh, R. (2018) What form of mathematics are assessments assessing? The case of multiplication and division in fourth grade NAEP items. *Journal of Mathematics Education at Teachers College*, 9(1), 1-8.
- Weston, T., Kosko, K. W., Amador, J., & Estapa, A. (2018). Prospective teachers' questioning: Comparing platforms for practice-based teacher education. *Journal of Technology and Teacher Education*, 26(1), 149-172.
- Amador, J., Estapa, A., de Araujo, Z., Kosko, K., & Weston, T. (2017). Eliciting and analyzing preservice teachers' mathematical noticing. *Mathematics Teacher Educator*, 5(2), 158-177.

- Ferdig, R. E., Pytash, K. E., Kosko, K. W., Memis, R., Ryan, K. & Dunlosky, J. (2017). The impact of eWriters on literacy motivation, self-efficacy, and the real-virtual-relationships between parents and teachers. *Journal of Interactive Learning Research*, 28 (4), 341-357.
- Kosko, K. W. (2017). Effects of student-reported gameplay strategy related to growth in multiplicative reasoning. *The Electronic Journal of Mathematics & Technology*, 11(3).
- Kosko, K. W., & Gao, Y. (2017). Mathematical communication in state standards before the Common Core. *Educational Policy*, 31(3), 275-302.
- Amador, J., Weston, T., Estapa, A., Kosko, K., & De Araujo, Z. (2016). Animations as transformational approximation of practice for preservice teachers to communicate professional noticing. *Journal of Technology and Teacher Education*, 24(2), 127-151.
- Herbst, P., Chazan, D., Kosko, K., Dimmel, J., & Erikson, A. (2016). Using multimedia questionnaires to study influences on the decisions mathematics teachers make in instructional situations. *ZDM*, 48(1), 167-183.
- Kosko, K. W. (2016). Making use of what's given: Children's detailing in mathematical argumentative writing. *Journal of Mathematical Behavior*, 41, 68-86.
- Kosko, K. W. (2016). [Primary teachers' choice of probing questions: Effects of MKT and supporting student autonomy](#). *International Electronic Journal of Mathematics Education*, 11(4), 991-1012.
- Kosko, K. W. (2016). Writing in mathematics: A survey of K-12 teachers' reported frequency in the classroom. *School Science and Mathematics*, 116(5), 276-285.
- Kosko, K. W., & Ferdig, R. E. (2016). Effects of a tablet-based mathematics application for pre-school children. *Journal of Computers in Mathematics and Science Teaching*, 35(1), 61-79.
- Kosko, K. W., & Gao, Y. (2016). [The tale of two teachers' use of prompts in mathematical discussions](#). *Issues and Ideas in Education*, 4(2), 111-130.
- 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.
- de Araujo, Z., Amador, J., Estapa, A., Weston, T., Aming-Attai, R., & Kosko, K. W. (2015). Animating preservice teachers' noticing. *Mathematics Teacher Education and Development*, 17(2), 25-44.
- Kosko, K. W. (2015). Geometry students' self-determination and their engagement in mathematical whole class discussion. *Investigations in Mathematics Learning*, 8(2), 17-36.
- Kosko, K. W., & Wilkins, J. L. M. (2015). Does time matter in improving mathematical discussions? The influence of mathematical autonomy. *Journal of Experimental Education*, 83(3), 368-385.

- 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.
- Kosko, K. W. (2014). What students say about their mathematical thinking when they listen. *School Science and Mathematics*, 114(5), 214-223.
- 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.
- Kosko, K. W. (2012). Geometry students' hedged statements and their self-regulation of mathematics. *The Journal of Mathematical Behavior*, 31(4), 489-499.
- Kosko, K. W., & Norton, A. (2012). Relationships between the process standards: Processes elicited through letter writing between preservice teachers and high school mathematics students. *School Science and Mathematics*, 112(6), 340-348.
- 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.
- 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.
- 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.
- 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.
- 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>
- 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.
- 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](http://www.theprofessionaleducator.org/articles/Kosko_final.pdf)

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.

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.

## Books, Book & Monograph Chapters

Kosko, K. W. (2019). The form of mathematics in assessment items: How items convey and measure multiplicative reasoning differently. In J. Bostic, E. Krupa, & J. Shih (Eds.), *Quantitative measures of mathematical knowledge: Researching instruments and perspectives* (pp. 14-40). New York, NY: Routledge.

Kosko, K. W., Sobolewski, L., & Amiruzzaman, M. (2018). Growing in number: Research on mathematical teaching and learning in the online setting. In K. Kennedy, & R. E. Ferdig (Eds.), *Handbook of research on K-12 online and blended learning* 2<sup>nd</sup> Ed. (pp. 289-302). Pittsburgh, PA: ETC Press. Retrieved at: <http://repository.cmu.edu/etcpress/82/>

Kosko, K. W. (2016). Going beyond numbers to complicate the given information: Elementary children's mathematical writing. In J. K. Dowdy & Y. Gao (Eds.), *Pumping it up: Literacy activities for the classroom* (pp. 111 - 116). Boston: Sense Publishers.

Herbst, P., Chazan, D., Chieu, V. M., Milewski, A., Kosko, K., & Aaron, W. (2016). Technology-mediated mathematics teacher development: Research on digital pedagogies of practice. In M. L. Niess, S. Driskell, & K. Hollerands (Eds.), *Handbook of Research on Transforming Mathematics Teacher Education in the Digital Age* (pp. 76-105). Hershey, PA: IGI Global.

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). Pittsburgh, PA: ETC Press. Retrieved at: [http://press.etc.cmu.edu/files/Handbook-Blended-Learning\\_Ferdig-Kennedy-et-al\\_web.pdf](http://press.etc.cmu.edu/files/Handbook-Blended-Learning_Ferdig-Kennedy-et-al_web.pdf)

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.

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.

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.

## Book Reviews

Kosko, K. W., & Wilkins, J. L. M. (2016). What mathematics do students know and how is that knowledge changing? Evidence from the National Assessment of Educational Progress [Book Review]. *Teachers College Record*, Date Published: March 10, 2016. <https://www.tcrecord.org> ID Number: 19574.

## Published Conference Proceedings (Peer-Reviewed)

Austin, C. K., & Kosko, K. W. (in press). Survey of preservice teachers' pedagogical content knowledge for students' multiplicative reasoning. In *Proceedings of the 42<sup>nd</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education*. Mazatlán, Sinaloa, Mexico: Cinvestav & the Mexican Association for Research on the Use of Technology in Mathematics Education.

Kosko, K. W., Heisler, J., & Gandolfi, E. (in press). Professional teacher noticing as embodied activity. In *Proceedings of the 42<sup>nd</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education*. Mazatlán, Sinaloa, Mexico: Cinvestav & the Mexican Association for Research on the Use of Technology in Mathematics Education.

Zolfaghari, M., Kosko, K. W., & Heisler, J. (in press). Exploring preservice teachers' pedagogical content knowledge of teaching fractions. In *Proceedings of the 42<sup>nd</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education*. Mazatlán, Sinaloa, Mexico: Cinvestav & the Mexican Association for Research on the Use of Technology in Mathematics Education.

Miller, M., Yang, Y., Kosko, K., Lu, C. C., Ferdig, R., & Guan, Q. (in press). Empeiría: Powering future education training systems with device agnostic web-vr apps. In *Proceedings of Human-Computer Interactions International*. New York: Springer.

Ferdig, R. E., Gandolfi, E., & Kosko, K. W. (2020). Preservice teacher noticing and perceptual capacity with 360 video and VR headsets. In *Proceedings of the Society for Information Technology & Teacher Education* (pp. 724-726), Association for the Advancement of Computing in Education (AACE).

Gandolfi, E., Ferdig, R. E., & Kosko, K. W. (2020). The extended reality presence scale. In *Proceedings of the Society for Information Technology & Teacher Education* (pp. 1011-1017), Association for the Advancement of Computing in Education (AACE).

- Kosko, K. W. (2019) Integrating 360 video into a mathematics methods course. In the S. Otten, A. G. Candela, Z. de Araujo, C. Haines, & C. Munter (Eds.), *Proceedings of the 41<sup>st</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (p. 679). St. Louis, MO: University of Missouri.
- Kosko, K. W., Ferdig, R. E., & Zolfaghari, M. (2019) Preservice teachers' noticing in the context of 360 video. In the S. Otten, A. G. Candela, Z. de Araujo, C. Haines, & C. Munter (Eds.), *Proceedings of the 41<sup>st</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (pp. 1167-1171). St. Louis, MO: University of Missouri.
- Benjamin, J., & Kosko, K. W. (2019). Children's conveyed multiplicative meaning across models. In A. Redmond-Sanogo, & J. Cribbs (Eds.), *Proceedings of the 46th annual meeting of the Research Council of Mathematics Learning* (pp. 26-33), Charlotte, NC: RCML.
- Kosko, K. W. (2018) Teaching norms for the order of multiplication in third grade. In the T.E. Hodges, G. J. Roy, & A. M. Tyminski (Eds.), *Proceedings of the 40<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (p. 1142). Greenville, SC.
- Kosko, K. W., & Singh, R. (2018) Third grade textbooks' models for multiplication & division. In the T.E. Hodges, G. J. Roy, & A. M. Tyminski (Eds.), *Proceedings of the 40<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (pp. 117-120). Greenville, SC.
- Amiruzzaman, M., Kosko, K. W., Amiruzzaman, S. R. (2017). Preservice mathematics teachers' understanding of mode. In E. Galindo & J. Newton (Eds.), *Proceedings of the 39<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (pp. 625-628). Indianapolis, IN.
- Conner, A., Kosko, K. W., Staples, M., Cirillo, M., Bieda, K., & Newton, J. (2017). Conceptions and consequences of what we call argumentation, justification, and proof. In E. Galindo & J. Newton (Eds.), *Proceedings of the 39<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (pp. 1464-1473). Indianapolis, IN.
- Kosko, K. W. (2017) Effects of a mathematical writing treatment on children's conception of equivalence. In E. Galindo & J. Newton (Eds.), *Proceedings of the 39<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (pp. 768). Indianapolis, IN.
- Singh, R., & Kosko, K. W. (2017). Exploring the structure of equivalence items in an assessment of elementary grades. In E. Galindo & J. Newton (Eds.), *Proceedings of the 39<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (pp. 211-218). Indianapolis, IN.

- Singh, R., & Kosko, K. W. (2017). Open number sentences: A better way to assess precisely the conception of equivalence. In E. Galindo & J. Newton (Eds.), *Proceedings of the 39<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (pp. 329). Indianapolis, IN.
- Amiruzzaman, M., & Kosko, K. W. (2016). Exploring students' understanding of median. In M. B. Wood, E. E. Turner, M. Civil, & J. A. Eli (Eds.), *Proceedings of the 38<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (p. 660-663). Tucson, AZ: The University of Arizona.
- Kosko, K. W. (2016). Preservice elementary mathematics teachers' decision making: The questions they ask and the tasks they select. In M. B. Wood, E. E. Turner, M. Civil, & J. A. Eli (Eds.), *Proceedings of the 38<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (p. 1341-1344). Tucson, AZ: The University of Arizona.
- Kosko, K. W., & Singh, R. (2016). Children's linguistic and numeric unit coordination. In M. B. Wood, E. E. Turner, M. Civil, & J. A. Eli (Eds.), *Proceedings of the 38<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (p. 605-612). Tucson, AZ: The University of Arizona.
- Singh, R., & Kosko, K. W. (2016). Elementary students' understanding of equivalence and multiplicative reasoning. In M. B. Wood, E. E. Turner, M. Civil, & J. A. Eli (Eds.), *Proceedings of the 38<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (p. 212). Tucson, AZ: The University of Arizona.
- Staples, M., Newton, J., Kosko, K. W., Conner, A., Cirillo, M., & Bieda, K. (2016). Conceptions and consequences of what we call argumentation, justification, and proof. In M. B. Wood, E. E. Turner, M. Civil, & J. A. Eli (Eds.), *Proceedings of the 38<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (p. 1704-1712). Tucson, AZ: The University of Arizona.
- Strachota, S., Hummer, J., Cirillo, M., Newton, J., Kosko, K. W., Staples, M., & Weber, K. (2016). Conceptions of proof, argumentation, and justification. In M. B. Wood, E. E. Turner, M. Civil, & J. A. Eli (Eds.), *Proceedings of the 38<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education* (p. 712). Tucson, AZ: The University of Arizona.
- Kosko, K. W., & Singh, R., (2016). Colligation and unit coordination in mathematical argumentative writing. In Adolphson, K. V. and Olson, T. M. (Eds.), *Proceedings of the 43rd annual meeting of the Research Council of Mathematics Learning* (pp. 18-25), Orlando, FL: RCML.



- Cirillo, M., Kosko, K. W., Newton, J., Staples, M., & Weber, K. (2015). Conceptions and consequences of what we call argumentation, justification, and proof. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield, & H. Dominguez (Eds.), *Proceedings of the 37<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1343-1351), Lansing, MI: Michigan State University.
- Singh, R., & Kosko, K. W. (2015). Lost in transition: Difficulties in adapting relational view of equals sign. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield, & H. Dominguez (Eds.), *Proceedings of the 37<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 233-236), Lansing, MI: Michigan State University.
- 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 113<sup>th</sup> annual convention of the School Science and Mathematics Association* (pp. 23-30). Jacksonville, FL: SSMA.
- 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.
- Herbst, P., Dimmel, J., Erickson, A. W., Koh, I., & Kosko, K. (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.
- 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 35<sup>th</sup> 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.
- 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 35<sup>th</sup> 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.
- 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 34<sup>th</sup> 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.

- 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.
- 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.
- 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.
- Kosko, K. W., & Wilkins, J. L. M. (2010). Communicating quantitative literacy. In P. Brosnan, D. Erchick, & L. Flevaris (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.
- Kosko, K. W. (2010). Student-reported listening in mathematical discussion. In P. Brosnan, D. Erchick, & L. Flevaris (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.
- 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.

## White Papers & Unpublished Reports

- Kosko, K. W. (2018). *A history of mathematics education at Kent State University: 1961 to 2017*. Kent, OH: Kent State University. Retrieved from: [https://www.researchgate.net/publication/325366848\\_A\\_History\\_of\\_Mathematics\\_Education\\_at\\_Kent\\_State\\_University\\_1961\\_to\\_2017](https://www.researchgate.net/publication/325366848_A_History_of_Mathematics_Education_at_Kent_State_University_1961_to_2017)
- Staples, M., Newton, J., Kosko, K., Conner, A., Cirillo, M., Bieda, K., Yopp, D., Zaslavsky, O., Hummer, J., Strachota, S., Singh, R., An, T., Going, T., & Zhuang, Y. (2017). *Using artifacts to explore conceptions of consequences of argumentation, justification, and proof* (report). PME-NA Working Group. Retrieved from: [https://www.researchgate.net/publication/317267228\\_White\\_Paper\\_Using\\_Artifacts\\_to\\_Explore\\_Conceptions\\_and\\_Consequences\\_of\\_Argumentation\\_Justification\\_and\\_Proof](https://www.researchgate.net/publication/317267228_White_Paper_Using_Artifacts_to_Explore_Conceptions_and_Consequences_of_Argumentation_Justification_and_Proof)

- Cirillo, M., Kosko, K. W., Newton, J., Staples, M., Weber, K., Bieda, K., Conner, A., Mejia-Ramos, P., Otten, S., Creager, M., Hummer, J., Singh, R., & Strachota, R. (2016). *Conceptions and consequences of what we call argumentation, justification, and proof* (report). PME-NA Working Group. Retrieved from: [https://www.researchgate.net/publication/300088457\\_White\\_Paper\\_2016\\_Conceptions\\_and\\_Consequences\\_of\\_What\\_We\\_Call\\_Argumentation\\_Justification\\_and\\_Proof](https://www.researchgate.net/publication/300088457_White_Paper_2016_Conceptions_and_Consequences_of_What_We_Call_Argumentation_Justification_and_Proof)
- Ferdig, R.E., Pytash, K.E., Kosko, K.W., Gandolfi, E., & Mathews, R. with Bedesem, P., Harjusola-Webb, S., Sansosti, F., Lu, C.C, Kratoski, A., Mulvey, B., and Boyle, S. (2016). *Use and perceptions of mobile applications and technologies by those interested in special education*. Kent, OH: Kent State University. Retrieved from <http://spedapps.kent.edu/2016survey.pdf>.
- Blades, C., & Kosko, K. W. (2005). *Appropriate practices in developing field experiences for pre-service teachers*. Unpublished manuscript, Content Quality Network, Winthrop University.

## Grants & Funding

- Kosko, K. W. [PI], Ferdig, R. E., & Lu, C. C. (September 2019 – August 2022). *Design and implementation of immersive representations of practice*. National Science Foundation, DRK-12 (Award #1908159) [\$1,499, 759].
- Kosko, K. W. [PI] (2019). Using 360 video to teach future teachers. Kent State University, University Teaching Council [\$10,000].
- Kosko, K. W. [PI] (2017-2018). Designing a survey of third grade teachers' pedagogy for multiplication and division. Kent State University, University Research Council [\$2,500].
- Ferdig, R. E., Bedesem, P., Harjusola-Webb, S., Sansosti, F., & Lu, C. C. (2015 – 2016). [Key Personnel]. Exploring mobile apps for special education STEAM teaching and learning. AT&T Foundation [\$198,432].
- Marhefka, D., & Dunlosky, J. (2015 - 2017). [Key Personnel]. STTR Phase II: Digital eWriter for The Classroom. National Science Foundation, Division of Industrial Innovation & Partnership (Award # 1534669) [\$722,044].
- Kosko, K. W. [PI], & Ferdig, R. [Co-PI]. (May 2014 – April 2015). *Making mathematics mobile (M): Collaborating with K-12 schools to explore mathematics apps*. Martha Jennings Holden Foundation [\$30,725].
- Kosko, K. W. [PI] (Aug. 2014 – June 2016). *More than numbers: Developing a mathematical writing intervention for children*. College of Education, Health and Human Services [\$5,000].

## Invited Talks & Conference Presentations

- Austin, C., Heisler, J., & Kosko, K. W. (March, 2020). *Pedagogical content knowledge of teaching multiplication and division*. Poster presented at the Research Council on Mathematics Learning. Las Vegas, NV.
- McGalliard, W., & Kosko, K. W. (March, 2020). *Teachers' pedagogical and content knowledge for multiplicative reasoning*. Brief Report presented at the Research Council on Mathematics Learning. Las Vegas, NV.
- Zolfaghari, M., & Kosko, K. W. (March, 2020). *Pedagogical content knowledge of teaching fractions*. Poster presented at the Research Council on Mathematics Learning. Las Vegas, NV.
- Kosko, K. W. (February, 2020). *Using 360 video in professional training: The case of mathematics teacher education*. Presented to the College of Education, Health, and Human Services. Kent, OH: Kent State University.
- Heisler, J., Kosko, K. W., Zolfaghari, M., & Austin, C. (November, 2019). *Augmented, mixed and virtual reality: Professional growth & practice, tools, devices & apps*. Learning Innovations Conference. Kent, OH.
- Kosko, K. W. (October, 2019). *Training teachers through extended reality*. Presented at the STEM Entrepreneurship Event. Kent, OH. Viewable at: <https://youtu.be/-OqkfUpRYN8>
- Kosko, K. W., & Benjamin, J. (October, 2019). *ReSilience and Equity in STEAM Latinx Mathematics Education*. Ohio Latino Education Summit. Kent, OH.
- Kosko, K. W., & Mulvey, B. K. (June, 2019). *Math and science education pedagogy courses at Kent State University*. Virtual presentation to the faculty at Bahrain Teachers College, University of Bahrain.
- Kosko, K. W. (October, 2019). *Where does it come from? Fun history of elementary math 'tricks' and algorithms*. Presented at the 69<sup>th</sup> annual meeting of the Ohio Council of Teachers of Mathematics, Kalahari, OH.
- Benjamin, J., & Kosko, K. W. (February, 2019). *Children's conveyed multiplicative meaning across models*. Brief report presented at the 46<sup>th</sup> Annual conference of the Research Council on Mathematics Learning, Charlotte, NC.
- Kosko, K. W. (October, 2018). *Meaningful fraction multiplication and division*. Presented at the 68<sup>th</sup> annual meeting of the Ohio Council of Teachers of Mathematics, Akron, OH.
- Ferdig, R. E., & Kosko, K. W. (October, 2018). *Selecting meaningful apps for math teaching and learning*. Presented at the 68<sup>th</sup> annual meeting of the Ohio Council of Teachers of Mathematics, Akron, OH.

- Kosko, K. W. (February, 2018). *Justification in elementary students' mathematical argumentative writing*. Research report presented at the 45<sup>th</sup> annual meeting of the Research Council on Mathematics Learning, Baton Rouge, LA.
- Kosko, K. W. (October, 2017). *Using different models to represent multiplication and division in novel ways*. Presented at the 67<sup>th</sup> annual meeting of the Ohio Council of Teachers of Mathematics, Columbus, OH.
- Kosko, K. W. (October, 2016). *Using a tactile number line for K-5 math*. Presented at the 66th annual meeting of the Ohio Council of Teachers of Mathematics, Sandusky, OH.
- Kosko, K. W., & Singh, R. (February, 2016). *Colligation and unit coordination in mathematical argumentative writing*. Paper presented at the 43rd annual conference of the Research Council on Mathematics Learning, Orlando, FL.
- Kosko, K. W. (October, 2015). *Math writing tasks in early elementary grades*. Presented at the 65th annual meeting of the Ohio Council of Teachers of Mathematics, Cincinnati, OH.
- Kosko, K. W. (November, 2014). *Operationalizing the given information: Detailing in children's mathematical writing and its implications for development of proof* (Colloquium talk). Bowling Green State University, Bowling Green, OH.
- Kosko, K. W. (October, 2014). *Using multi-decision scenarios to facilitate teacher knowledge for mathematical questioning*. Round table presentation at the Annual Meeting for the School Science and Mathematics Association, Jacksonville, FL.
- Estapa, A., Amador, J., Aming-Attai, R., Kosko, K., de Araujo, Z., & 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.
- 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.
- Herbst, P., Aaron, W., & Kosko, K. (2011). *LessonSketch: A set of online tools and resources for research on teacher thinking about and learning from practice*. Paper presented at the 2011 Annual Conference of the School Science and Mathematics Association, Colorado Springs, CO.
- Herbst, P., Kosko, K., & Aaron, W. (2011). *Assessing the geometry knowledge of teachers: Perspectives from item design and cognitive interviewing*. Paper presented at the 2011 Annual Conference of the School Science and Mathematics Association, Colorado Springs, CO.

- Chieu, V. M., Herbst, P. G., & Kosko, K. W. (2011). *LessonSketch's navigation and communication technologies to support teacher learning in, from, and for practice*. Poster presented at the 3<sup>rd</sup> Annual Representations of Mathematics Teaching Conference, Ann Arbor, MI.
- Herbst, P. G., & Kosko, K. W. (2011). Video and animated representations of teaching: How conducive are each of them to the development of conversations about practice? Paper presented at the 3<sup>rd</sup> Annual Representations of Mathematics Teaching Conference, Ann Arbor, MI.
- Kosko, K. W., & Herbst, P. G. (2011). *Creating an assessment of mathematical knowledge for teaching in geometry*. Poster presented at the 3<sup>rd</sup> Annual Representations of Mathematics Teaching Conference, Ann Arbor, MI.
- Conn, A., Kosko, K. W., & San Pedro, J. M. (2009). *Using pen-pal partnerships to prepare preservice teachers*. Paper presented at the 2009 Annual Conference of the School Science and Mathematics Association, Reno, NV.
- Kosko, K. W., & Norton, A. (2009). *How demanding are the NCTM process standards?* Paper presented at the 2009 Annual Conference of the School Science and Mathematics Association, Reno, NV.
- Kosko, K. W., Wilkins, J. L. M., & Pitts Bannister, V. (2009). *Writing sophistication in students' answers to algebraic questions*. Poster presented at the Fourth Annual Virginia Tech School of Education Student Association Research Conference, Blacksburg, VA.
- Kosko, K. W., & Wilkins, J. L. M. (2008). *Is mathematics discussion effective: Interesting results from a national data set and what they might mean*. Paper presented at the 2008 Annual Conference of the School Science and Mathematics Association, Raleigh-Durham, NC.
- Kosko, K. W. (2008). *General educators' inservice training and their self-perceived ability to adapt instruction for special needs students*. Poster presented at the 2008 Annual Conference of the American Council on Rural Special Education, Charleston, WV.
- Kosko, K. W. (2005) *Concrete to abstract*. Presented at the 2005 Annual Conference of the South Carolina Council of Teachers of Mathematics, Greenville, SC.

## Peer-Reviewed Conference Presentations

- Austin, C. K., & Kosko, K. W. (October, 2020). *Survey of preservice teachers' pedagogical content knowledge for students' multiplicative reasoning*. Research Report presented at the 42<sup>nd</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education. Mazatlán, Sinaloa, Mexico.

- Kosko, K. W., Heisler, J., & Gandolfi, E. (October, 2020). *Professional teacher noticing as embodied activity*. Poster presented at the 42<sup>nd</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education. Mazatlán, Sinaloa, Mexico.
- Zolfaghari, M., Kosko, K. W., & Heisler, J. (October, 2020). *Exploring preservice teachers' pedagogical content knowledge of teaching fractions*. Brief Report presented at the 42<sup>nd</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education. Mazatlán, Sinaloa, Mexico.
- Miller, M., Yang, Y., Kosko, K., Lu, C. C., Ferdig, R., & Guan, Q. (July, 2020). *Empeiría: Powering future education training systems with device agnostic web-vr apps*. Presented at Human-Computer Interaction International 2020, Copenhagen, Denmark.
- Ferdig, R. E., Gandolfi, E., & Kosko, K. W. (April, 2020). *Preservice teacher noticing and perceptual capacity with 360 video and VR headsets*. Poster presented at the Society for Information Technology & Teacher Education, New Orleans, LA.
- Gandolfi, E., Ferdig, R. E., & Kosko, K. W. (April, 2020). *The extended reality presence scale*. Paper presented at the Society for Information Technology & Teacher Education, New Orleans, LA.
- Kosko, K. W., Weston, T., & Amador, J. (February, 2020). *Incorporating immersive 360 video in mathematics teacher education: Potential and challenges*. Presented at the Annual Meeting of the Association of Mathematics Teacher Educators, Phoenix, AZ.
- Kosko, K. W. (November, 2019). *Integrating 360 video into a mathematics methods course*. Poster presented at the 41<sup>st</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education, St. Louis, MO.
- Kosko, K. W., Ferdig, R. E., & Zolfaghari, M. (November, 2019). *Preservice teachers' noticing in the context of 360 video*. Brief report presented at the 41<sup>st</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education, St. Louis, MO.
- Kosko, K. W. (November, 2018) *Teaching norms for the order of multiplication in third grade*. Poster presented at the 40<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education, Greenville, SC.
- Kosko, K. W., & Singh, R. (November, 2018) *Third grade textbooks' models for multiplication & division*. Brief report presented at the 40<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education, Greenville, SC.
- Amiruzzaman, M., & Kosko, K. W. (October, 2017). *Preservice mathematics teachers' understanding of mode*. Brief report presented at the 39<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education, Indianapolis, IN.

- Kosko, K. W. (October, 2017) *Effects of a mathematical writing treatment on children's conception of equivalence*. Poster presented at the 39<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education, Indianapolis, IN.
- Singh, R., & Kosko, K. W. (October, 2017). *Exploring the structure of equivalence items in an assessment of elementary grades*. Paper presented at the 39<sup>th</sup> annual meeting of the North American Chapter for the Psychology of Mathematics Education, Indianapolis, IN.
- Kosko, K. W., Weston, T. L., Estapa, A., & Amador, J. (April, 2017). Preservice teachers' approximations of questioning. Roundtable presented at the 2017 annual meeting for the American Educational Research Association (Division K), San Antonio, TX.
- Kosko, K. W., & Singh, R. (April, 2017). What are fourth-grade NAEP multiplication items assessing? Poster presented at the 2017 annual meeting for the American Educational Research Association (Special Interest Group - Research in Mathematics Education), San Antonio, TX.
- Kosko, K. W. (February, 2017). *Using branching experiences in LessonSketch to open discourse about preservice teachers' pedagogical decisions and justifications*. Poster presented at the annual meeting for the Association of Mathematics Teacher Educators, Orlando, FL.
- Amador, J., Estapa, A., Weston, T., & Kosko, K. W. (November, 2016). *Communicating professional noticing through animations as a transformational approximation of practice*. Research report presented at the 38<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Tuscan, AZ.
- Amiruzzaman, M., & Kosko, K. W. (November, 2016). *Exploring students' understanding of median*. Brief research report presented at the 38<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Tuscan, AZ.
- Kosko, K. W. (November, 2016). *Preservice elementary mathematics teachers' decision making: The questions they ask and the tasks they select*. Brief research report presented at the 38<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Tuscan, AZ.
- Kosko, K. W., & Singh, R. (November, 2016). *Children's linguistic and numeric unit coordination*. Research report presented at the 38<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Tuscan, AZ.
- Staples, M., Newton, J., Kosko, K. W., Cirillo, M., Conner, A., & Bieda, K. (October, 2016). *Conceptions and consequences of what we call argumentation, justification, and proof*. Working group at the 38<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Tuscan, AZ.



- Singh, R., & Kosko, K. W. (October, 2016). *Elementary students' understanding of equivalence and multiplicative reasoning*. Poster presented at the 38<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Tuscan, AZ.
- Strachota, S., Hummer, J., Cirillo, M., Newton, J., Kosko, K. W., Staples, M., & Weber, K. (October, 2016). *Conceptions of Proof, Argumentation, and Justification*. Poster presented at the 38<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Tuscan, AZ.
- Singh, R., & Kosko, K. W. (July, 2016). *Effect of the structure of the mathematical equivalence problems on students' strategy*. 13th International Congress on Mathematical Education, Hamburg, Germany.
- Kosko, K. W., & Singh, R. (April, 2016). *Piloting an assessment of elementary children's unit coordination related to multiplicative reasoning*. Roundtable presented at the 2016 annual meeting for the American Educational Research Association (Special Interest Group – Research in Mathematics Education), Washington D.C.
- Kosko, K. W., & Singh, R. (April, 2016). *Children's mathematical argumentative writing and their understanding of equivalence*. Roundtable presented at the 2016 annual meeting for the American Educational Research Association (Special Interest Group – Research in Mathematics Education), Washington D.C.
- Cirillo, M., Kosko, K. W., Newton, J., Staples, M., & Weber, K. (November, 2015). *Conceptions and consequences of what we call argumentation, justification, and proof*. Working group at the 37<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Lansing, MI.
- Singh, R., & Kosko, K. W. (November, 2015). *Lost in transition: Difficulties in adapting relational view of equals sign*. Brief report presented at the 37<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Lansing, MI.
- Courtney, S., Kosko, K. W., McMahon, L. (April, 2015). *In the eye of the beholder: Mathematics teacher educators' interpretations of standards for mathematical practice*. Roundtable presentation at the American Educational Research Association (Division K), Chicago, IL.
- Kosko, K. W. (April, 2015). *Branching decisions: A means for examining teachers' decision paths for pedagogical choices*. Paper presented in symposium at the American Educational Research Association (Special Interest Group – Research in Mathematics Education), Chicago, IL.
- Kosko, K. W., & Rogers, K. C. (April, 2015). *Using barebones mathematical figures to examine elementary and collegiate instructors' conceptions of SMP3*. Round table presentation in roundtable session at the American Educational Research Association (Special Interest Group – Research in Mathematics Education), Chicago, IL.

- Kosko, K. W., & Zimmerman, B. (April, 2015). *Emergence of argument in children's mathematical writing*. Paper presented at the annual meeting for the American Educational Research Association (Division C), Chicago, IL.
- Estapa, A., Amador, J., de Araujo, Z., Weston, T., Kosko, K., & Aming-Attai, R. (April, 2015). *Noticing transfer across mediums for future elementary teachers*. Paper presented at the National Council of Teachers of Mathematics, Boston, MA.
- Amador, J., Estapa, A., Weston, T., Kosko, K., de Araujo, Z., & Aming-Attai, R. (February, 2015). *Noticing exposed through preservice teachers' video animations*. Presented at the Annual Meeting of the Association of Mathematics Teacher Educators, Orlando, FL.
- Courtney, S., & Kosko, K. (February, 2015). *Forecasting the impact and lifespan of the common core standards for mathematical practice*. Presented at the Annual Meeting of the Association of Mathematics Teacher Educators, Orlando, FL.
- Kosko, K. W., & Gao, Y. (July, 2014). *Perceptions and reality: One teacher's use of prompts in mathematical discussions*. Research report presented at the combined meeting for the 38<sup>th</sup> annual meeting of the International Group for the Psychology of Mathematics Education and 36<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Vancouver, Canada.
- 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 38<sup>th</sup> annual meeting of the International Group for the Psychology of Mathematics Education and 36<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Vancouver, Canada.
- Kosko, K. W. (May, 2014). *Mathematical writing: An exploratory study of one concrete operational child's mathematical descriptions*. Research report presented at the 44<sup>th</sup> Annual Meeting of the Jean Piaget Society, San Francisco, CA.
- Kosko, K. W. (November, 2013). *Teacher questioning: Does MKT and supporting student autonomy predict it?* Brief research report presented at the 35<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Chicago, IL.
- 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 register?* Research report presented at the 35<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Chicago, IL.

- 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.
- 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.
- 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 Pre-session, Denver, CO.
- 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 Pre-session, Denver, CO.
- 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.
- 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.
- 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.
- Herbst, P. G., & Kosko, K. W. (April, 2012). *Using cases as triggers for teachers' thinking about practice: A comparison of responses to animations and videos*. Round table paper presented at the 2012 Annual Meeting of the American Educational Research Association, Division C, Vancouver, Canada.
- Kosko, K. W., & Herbst, P. G. (April, 2012). *Teachers' notions of facilitating mathematical discussion and the influence of professional obligations for mathematics teaching*. Poster presented at the 2012 Annual Meeting of the American Educational Research Association, Division K, Vancouver, Canada.
- Kosko, K. W., & Herbst, P. G. (2011). *Where's the proof? Proof in U.S. high school geometry content standards*. Paper presented at the 33rd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Reno, NV.

- Kosko, K. W. (2011). *Self-regulation of mathematical writing*. Poster presented at the 2011 Annual Meeting of the American Educational Research Association, SIG – Research in Mathematics Education, New Orleans, LA.
- Herbst, P., Aaron, W., Chieu, V. M., Dimmel, J., Erickson, A., Kosko, K. W., Rougee, A. (2011). *Learning about the work of doing mathematics from geometric problem solving*. Presented concurrently at the 2011 Math In Action Conference and 2011 Conversations among Colleagues Conference. Grand Valley State University, Grand Rapids, MI.
- Kosko, K. W., & Wilkins, J. L. M. (2010). *Communicating quantitative literacy*. Research Brief presented at the 32nd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Columbus, OH.
- Kosko, K. W. (2010). *Student-reported listening in mathematical discussion*. Poster presented at the 32nd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Columbus, OH.
- Kosko, K. W., & Wilkins, J. L. M. (2010). *Students' quality of mathematical discussion and their self-determination in mathematics*. Round Table presentation at the 2010 Annual Meeting of the American Educational Research Association, SIG – Research in Mathematics Education, Denver, CO.
- Kosko, K. W., & Miyazaki, Y. (2009). *Compound effects of mathematics discussion on fifth grade math achievement*. Paper presented at the 31st Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Atlanta, GA.
- Kosko, K. W. (2009). *Discussion and writing in mathematics: How it works and how to make it work*. Presented at the 2009 Annual Meeting of the National Council of Teachers of Mathematics, Washington, D.C.
- Austin, J., Cameron, T., Glass, M., Kosko, K., Marsh, F., Abdelmagid, R., & Burge, P. (2008) *The first semester transition experience of full-time professionals transitioning to doctoral students in education*. Paper presented at the 2008 Annual Conference of the Eastern Education Research Association, Hilton Head, SC.
- Kosko, K. W. (2007) *Beliefs about inclusion in secondary and middle level mathematics classrooms: A replication study*. Paper presented at the 2007 Annual Conference of the Eastern Education Research Association, Clearwater, FL.

## TEACHING & INSTRUCTION

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### Kent State University

ADED 42292 - Mathematics Field Work Practicum

- Taught: Fall 2013.

CI 87791 - Doctoral Seminar in Mathematics Education

- Taught: Each semester between Fall 2014 - Spring 2018.

CI 67095/77095 - Special Topics: Learning Theories in Mathematics Education

- Taught: Spring 2015.

CI 67226/77226 - Improving Mathematics Instruction in Middle Childhood

Kent State University

- Taught: Spring 2014.

CI 67004/77004 - Professional Development in Teaching

- Taught: Fall 2017 & Fall 2019.

ECED 40107 - Teaching Mathematics: Early Years I

- Taught: Spring & Fall 2018.

ECED 40147 - Teaching Mathematics: Early Years II

- Taught: Each semester between Fall 2012 - Fall 2017, Spring 2019 & Fall 2019, Fall 2020.

EVAL 88795 - Special Topics: Mixed Methods

- Taught: Spring 2018.

### Virginia Tech

EDCI 4754/5754—Internship in Education: Mathematics

- Co-taught course: Spring 2007, 2008, and 2009.

## PROFFESIONAL SERVICE

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### Journal Reviewer

*Completed review(s) within the past five (5) years.*

*This list is complete to the best of my knowledge.*

American Educational Research Journal (AERJ)	Journal of Mathematics Teacher Education (JMTE)
Educational Researcher	Journal of Research in Mathematics Education (JRME)
Educational Studies in Mathematics (ESM)	Journal of Teacher Education (JTE)
International Electronic Journal of Mathematics Education (IEJME)	Journal of Teaching and Teacher Education (JTTE)
Investigations in Mathematics Learning (IML)	Journal of Technology and Teacher Education (JTATE)
Journal of Mathematical Behavior (JMB)	Ohio Journal of School Mathematics (OJSM)
	Studies in Educational Evaluation (SEE)
	School Science & Mathematics Journal (SSMJ)

### Conference Proposals Reviewer

- 2020 Research Council on Mathematics Learning
- 2019 Psychology of Mathematics Education - North America (PME-NA).
- 2019 Research Council on Mathematics Learning
- 2018 American Educational Research Association  
Division C - Learning & Instruction, Section 1c: Mathematics.
- 2018 Psychology of Mathematics Education - North America (PME-NA).
- 2018 Research Council on Mathematics Learning
- 2017 American Educational Research Association  
Division C - Learning & Instruction, Section 1c: Mathematics.
- 2017 Psychology of Mathematics Education - North America (PME-NA).
- 2017 Research Council on Mathematics Learning
- 2016 Psychology of Mathematics Education - North America (PME-NA).
- 2016 Research Council on Mathematics Learning
- 2015 Psychology of Mathematics Education - North America (PME-NA).
- 2015 American Educational Research Association  
Special Interest Group: Research in Mathematics Education.
- 2015 National Council of Teachers of Mathematics - Research Conference
- 2015 Research Council on Mathematics Learning
- 2014 American Educational Research Association  
Special Interest Group: Research in Mathematics Education.
- 2014 Research Council on Mathematics Learning
- 2013 Psychology of Mathematics Education - North America (PME-NA).
- 2013 American Educational Research Association  
Division C - Learning & Instruction, Section 1c: Mathematics.  
Special Interest Group: Research in Mathematics Education.

- 2012 Psychology of Mathematics Education – North America (PME-NA).  
 2012 Association of Mathematics Teacher Educators (AMTE).  
 2012 American Educational Research Association  
 Division C – Learning & Instruction, Section 1c: Mathematics.  
 Special Interest Group: Research in Mathematics Education.  
 2011 Psychology of Mathematics Education – North America (PME-NA).  
 2010 Psychology of Mathematics Education – North America (PME-NA).  
 2009 American Educational Research Association  
 Special Interest Group: Research in Mathematics Education (Graduate Reviewer).  
 2006 Eastern Educational Research Association (EERA).

## Dissertation and Thesis Committees

*Students listed without titles have passed their comprehensive exams and are writing their dissertation proposal. Other students listed as ‘in progress’ have passed their dissertation proposal defense.*

### Chair or Co-Chair

Benjamin, J. (in progress).

- Co-Chair of Committee.

Amiruzzaman, M. (2019). *Use of Twitter among college students and its impact of their academics* (doctoral dissertation). Kent, OH: Kent State University.

- Co-Chair of Committee.

Alexander, A. (2019). *The perceptions of alignment between advanced placement Calculus AB and college Calculus I: A mixed methods study of instructional strategies, curriculum, and assessment* (doctoral dissertation). Kent, OH: Kent State University.

- Committee Chair.

Singh, R. (2019). *Role of structure of equations in identifying students’ conception of equivalence* (doctoral dissertation). Kent, OH: Kent State University.

- Committee Chair.

Muckridge, N. (2017). *Adult developmental learners’ knowledge of fraction addition and subtraction* (doctoral dissertation). Kent, OH: Kent State University.

- Co-Chair of Committee.

Sobolewski-McMahon, L. (2017). *Middle school mathematics teachers’ perceptions of the Common Core State Standards for Mathematical Practice* (doctoral dissertation). Kent, OH: Kent State University.

- Co-Chair of Committee.

Amiruzzaman, M. (December, 2016). Exploring preservice teachers' understanding of measures of central tendency (doctoral dissertation). Kent, OH: Kent State University.

- Co-Chair of Committee.

Trehan, D. M. (December, 2015). *The impact of concept mapping as a learning tool on student perceptions of and experiences with introductory statistics* (doctoral dissertation). Kent, OH: Kent State University.

- Co-Chair of Committee.

### Member of Committee

Elsharif, R. (in progress). The average of some irreducible character degrees (doctoral dissertation). Kent, OH: Kent State University.

Krasniqi, F. (in progress). *Curriculum traditions in teacher preparation: A mixed methods study of Kosovo teacher educators' views on effective teacher preparation* (doctoral dissertation). Kent, OH: Kent State University.

Pang, X. (in progress). *On the nature of academic rankings: The relationship between the academic rankings' quality of education and the quality of curriculum in Ph.D. C&I programs in America* (doctoral dissertation). Kent, OH: Kent State University

Widmer, F. (in progress). *A sequential explanatory mixed methods research study of teachers' perceptions and perspectives of high-quality movement in the classroom* (doctoral dissertation). Kent, OH: Kent State University.

Baumgartner, E. E. (2020). *The impact of virtual reality and 360-degree video on spatial reasoning skills in elementary students* (doctoral dissertation). Kent, OH: Kent State University.

Montgomery, M. L. (2020). *Educational vision in the 21<sup>st</sup> century: A quantitative study of the effect of superintendent vision on digital learning* (doctoral dissertation). Kent, OH: Kent State University.

Bissler, M. W. (2017). *Character degree graphs of solvable groups* (doctoral dissertation). Kent, OH: Kent State University.

Crawford, A. (2017). *Self-determination theory and middle school mathematics teachers: Understanding the motivation to attain professional development* (doctoral dissertation). Kent, OH: Kent State University.

Eliustaoglu, E. (May, 2016). *Investigation of fraction schemes and models as a means to understand how sixth grade students make sense of fractions* (Masters thesis). Kent, OH: Kent State University.

Stoyle, K. (May, 2016). *Supporting mathematical explanation, justification, and argumentation through multimedia* (doctoral dissertation). Kent, OH: Kent State University.



Brennan, C. R. (May, 2015). *Implementation of authentic online investigative activities in ratio and proportion for adult learners* (doctoral dissertation). Kent, OH: Kent State University.

Stoll, J. (2014). *Development of a survey instrument to gauge preschool teachers' knowledge, behaviors and attitudes regarding the National Council of Teachers of Mathematics (NCTM) process standards* (doctoral dissertation). Kent, OH: Kent State University.

## Other Professional Service

### College & University Service:

#### Miscellaneous Service

*Value-Added Module Recommendations and Design* (2018). College of Education, Health, and Human Services: Kent State University.

- Provided recommendations for a two-part module for teacher candidates across all programs, related to Value-Added Measures. This included writing the second part module focusing on interpreting value-added reports.

#### Committees

*Technology Advisory Committee.* (2020 - 2022). College-level Committee, College of Education, Health, and Human Services: Kent State University.

*Scholarship Committee: School of Teaching, Learning, & Curriculum Studies.* (2020 - 2021). Department-level Committee, College of Education, Health, and Human Services: Kent State University.

*College Advisory Council [CAC].* (2018 - 2020). College-level Committee, College of Education, Health, and Human Services: Kent State University.

*Honors and Awards Committee.* (2018 - 2019). College-level Committee, College of Education, Health, and Human Services: Kent State University.

*Faculty Advisory Council [FAC].* (2017 - 2020). School-level Committee, School of Teaching, Learning, & Curriculum Studies in the College of Education, Health, and Human Services: Kent State University.

*Graduate Appeals Committee.* (2014 - present). College-level Committee, College of Education, Health, and Human Services: Kent State University.

*University Council on Technology.* (2014 - present). University-level Committee: Kent State University.

*Technology Advisory Committee.* (2014 - 2016). College-level Committee, College of Education, Health, and Human Services: Kent State University.

*Member of Instructional Technology Position Search Committee.* (2018). College of Education, Health, and Human Services: Kent State University.

*Co-Chair of Search Committee for Early Childhood Mathematics Education Faculty.* (2014 - 2015). Department-level Committee, College of Education, Health, and Human Services: Kent State University.

*External Member of Special Education Early Childhood Position Search Committee.* (2013 - 2014). College of Education, Health, and Human Services: Kent State University.

Sub and Ad Hoc Committees (of note)

- Online Master's Degree Implementation.* (2019). Program-level Ad Hoc Committee, Curriculum and Instruction Program in College of Education, Health, and Human Services: Kent State University.
- Clicker Sub-committee.* (2015 - 2016). University-level Sub-Committee for the University Council on Technology: Kent State University.
- Early Childhood Equity Committee.* (2015 - 2016). Program-level Ad Hoc Committee, Early Childhood Education in College of Education, Health, and Human Services: Kent State University.
- Online Master's Degree Option.* (2015 - 2016). Program-level Ad Hoc Committee, Curriculum and Instruction Program in College of Education, Health, and Human Services: Kent State University.
- Student Survey of Instruction, Review Committee Advisory Board.* (2015 - 2016). University-level Committee: Kent State University.
- Scantron Sub-committee.* (2015 - 2016). University-level Sub-Committee for the University Council on Technology: Kent State University.

Affiliation and Membership

- Center for Math and Science Education.* (2012 - present). Affiliate faculty. College of Education, Health, and Human Services: Kent State University.
- Early Childhood Education.* (2012 - present). Program faculty. College of Education, Health, and Human Services: Kent State University.
- Curriculum & Instruction.* (2012 - present). Program faculty. College of Education, Health, and Human Services: Kent State University.

State Level Service

- 2018 - present      Ohio Department of Education  
Grade 5 Mathematics Content Advisory Committee
- 2018                  Ohio Department of Education  
External Review of Ohio Extended Mathematics Learning Standards

National and International Service

- 2020 - 2023      National Council of Teachers of Mathematics (NCTM)  
Journal for Research in Mathematics Education (JRME) Committee
- 2019 - 2021      Psychology of Mathematics Education - North America  
Steering Committee
- 2019 - 2021      Investigations in Mathematics Learning  
Editorial Review Board Member
- 2018                  Psychology of Mathematics Education Annual Meeting  
Strand Leader for Student Learning & Related Factors
- 2015 - 2019      Journal of Technology and Teacher Education  
Editorial Review Board Member
- 2015                  National Science Foundation Review Panelist - Washington, D.C.
- 2015 - 2017      American Educational Research Association  
Section Chair for Division C, Section 1c: Mathematics
- 2014                  National Science Foundation Review Panelist - Washington, D.C.
- 2014                  Jean Piaget Society Annual Meeting - Session Chair
- 2014                  Psychology of Mathematics Education Annual Meeting - Session Chair

## Professional Organizations

2012 - Ongoing	American Association of University Professors (AAUP)
2014 - Ongoing	Association of Mathematics Teacher Educators (AMTE)
2004 - Ongoing	National Council of Teachers of Mathematics (NCTM)
2017 - Ongoing	Ohio Council of Teachers of Mathematics (OCTM)
2009 - Ongoing	Psychology of Mathematics Education - North America (PME-NA)
2016 - Ongoing	Research Council on Mathematics Learning (RCML)
2008 - Ongoing	School Science and Mathematics Association (SSMA)

## PROFESSIONAL EXPERIENCE

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<b>Associate Professor, Mathematics Education</b> Kent State University	August 2018 - present
<b>Assistant Professor, Mathematics Education</b> Kent State University	August 2012 - July 2018
<b>Post Doctoral Research Fellow</b> University of Michigan NSF Grant: Thought Experiments in Mathematics Teaching II Principal Investigator: Patricio Herbst	July 2010 - August 2012
<b>Graduate Research Assistant</b> Virginia Tech Mentor/Advisor: Jesse L. M. Wilkins	August 2006 - June 2010
<b>Teacher Education Supervisor: Secondary Mathematics</b> Virginia Tech Mentor/Advisor: Vanessa R. Pitts Bannister	August 2006 - May 2009
<b>Teacher</b> York County District #3, Rock Hill, SC	August 2002 - May 2006
<b>Teacher Mentor</b> Winthrop University	2005 - 2006
<b>Research Assistant</b> South Carolina Middle School Association Content Quality Network	2005

## HONORS & AWARDS

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- 2020 Kent State University  
President's Faculty Excellence Award
- 2019 Kent State University  
Outstanding New Faculty Research and Scholarship Award
- 2019 Kent State University – College of Education, Health, & Human Services  
Outstanding Early Career Researcher Award
- 2019 Kent State University – College of Education, Health, & Human Services  
Spring 2019 Featured Researcher
- 2015 - 2016 Kent State University - Teaching Scholar.
- 2013 STaR Fellow (Service, Teaching and Research Program - 4<sup>th</sup> Cohort).
- 2010 Virginia Tech - School of Education, Outstanding Graduate Student Award.
- 1998 Eagle Scout.