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 Cheongju-si, Chungbuk 28173, South Korea
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EDUCATION

- 2018 Ph.D. in Teaching and Learning (Mathematics Education)
 University of Iowa, Iowa City, IA

Dissertation: Bridge the gap between cognitive attributes and mathematics achievement: Which cognitive attributes for mathematical modeling contributed to better learning in mathematics?
Committee: Kyong Mi Choi (co-chair), Brian Hand (co-chair), Timothy Ansley, Stephen Dunbar, Dae S. Hong
- 2017 M.A. in Teaching and Learning (Mathematics Education)
 University of Iowa, Iowa City, IA
- 2016 M.A. in Psychological and Quantitative Foundations (Educational Measurement and Statistics)
 University of Iowa, Iowa City, IA
- 2011 M.S. in Mathematics Education
 Seoul National University, Seoul, South Korea

Thesis: Monotone iterative methods for a coupled system of fractional diffusion equations
- 2008 B.S. in Mathematics Education
 Seoul National University, Seoul, South Korea

Thesis: Analysis of Bertrand's paradox with mathematical probability – focused on Education (in Korean)

PROFESSIONAL APPOINTMENT

- 2021 – Present Korea National University of Education, Cheongju, South Korea
 Assistant Professor

2020 – 2021	Kangwon National University, Chuncheon, South Korea Assistant Professor
2020 – 2022	University of Iowa, Iowa City, IA Adjunct Assistant Professor
2018 – 2020	University of Iowa, Iowa City, IA Postdoctoral Research Scholar <i>Project title:</i> Moving beyond pedagogy: Developing elementary teachers' adaptive expertise in using the epistemic complexity of science (NSF award number: 1812576, PI: Brian Hand, Gavin Fulmer, and Jee Kyung Suh)

PROFESSIONAL ACTIVITIES

2023 – 2024	Director of International Cooperation, Korea Society of Educational Studies in Mathematics
2023 – 2024	Director of Domestic Academic, Korea Society of Mathematics Education
2020 – 2022	Director without Portfolio, Korea Society of Educational Studies in Mathematics
2021 – 2022	Director of International Cooperation, Korea Society of Mathematics Education

EDITORIAL ACTIVITIES

2023 – 2024	Editorial Board Member of the Journal of Educational Research in Mathematics
2023 – 2024	Editorial Board Member of the Journal of Korean School Mathematics Society
2023 – 2024	Editorial Board Member of the Journal of the Korean Society of Mathematical Education Series D
2020 – 2022	Vice-Chief Editor of the Journal of the Korean Society of Mathematical Education Series D

PROFESSIONAL AFFILIATIONS

- AERA (American Educational Research Association)
 - Division C: Learning and Instruction
 - Special Interest Group: Research in Mathematics Education
- ICME (International Congress on Mathematical Education)
 - TSG-51
- KSESM (Korean Society of Educational Studies in Mathematics)
- KSME (Korea Society of Mathematics Education)
- KMS (Korea Mathematical Society)

RESEARCH INTEREST

- Epistemic Actions
- Epistemological Belief and Epistemic Agency in STEM disciplines
- Attitude toward mathematics
- International Comparison Studies
- Machine Learning in Mathematics Education

PUBLICATIONS

Journal Articles

Karaer, G., **Hwang, J.**, Chanlen, N., & Hand, B. (under review). Longitudinal study examining immersing IEP students in argument-based inquiry to improve learning of science.

Hwang, J. (under review). Examining the impact of COVID-19 pandemic on the achievement gap: The role of private education and parental support.

Hwang, J. (under review). Development of an instrument for measuring Korean pre-service teachers' understanding of language as an epistemic tool in mathematics education.

Jung, S., Ahn, J. S., & Hwang, J. (under review). Investigating students' profiles of mathematical modeling: A latent profile analysis in PISA 2012. *Journal of the Korean Society of Mathematical Education Series D: Research in Mathematical Education*.

Song, H. Y., Ka, Y., & **Hwang, J.** (in press). Exploring opportunities for mathematical modeling in Korean high school textbooks: An analysis of exponential and logarithmic function tasks. *Journal of the Korean Society of Mathematical Education Series D: Research in Mathematical Education*.

Lee, G., Kim, H., & **Hwang, J.** (in press). A critical exploration of mathematics learning trajectories research in the Korean context: A systematic literature review. *Journal of Educational Research in Mathematics*.

Hwang, J. (2023). The relationship between epistemic actions and mathematics achievement at the elementary school level. *Investigation in Mathematics Learning*.
<https://doi.org/10.1080/19477503.2023.2233349>

Hwang, J., Hand, B., & French, B. (2023). Critical thinking skills and science achievement: A latent profile analysis. *Thinking Skills and Creativity*. 49.
<https://doi.org/10.1016/j.tsc.2023.101349>

Hwang, J. (2023). Exploring the epistemic actions in pre-service teachers' tasks. *Journal of the Korean Society of Mathematical Education Series D: Research in Mathematical Education*, 26(1), 19–30. <https://doi.org/10.7468/jksmed.2023.26.1.19>

- Kim S. H., Rim, H., Kim, Y. M., **Hwang, J.**, Kim, S. M., & Kim, C. M. (2023). Validation of a scenario-based assessment for attitude toward mathematics and mathematical practices. *Journal of Educational Research in Mathematics*, 33(1), 145–172. <https://doi.org/10.29275/jerm.2023.33.1.145> (in Korean)
- Hwang, J.** (2023). Impact of curriculum revisions on mathematics achievement at the school level. *Journal of Educational Research in Mathematics*, 33(1), 41–56. <https://doi.org/10.29275/jerm.2023.33.1.41> (in Korean)
- Hwang, J.**, Choi, K., & Hand, B. (2023). Epistemic actions and mathematics achievement. *International Journal of Science and Mathematics Education*, 21, 787–809. <https://doi.org/10.1007/s10763-022-10278-2>
- Hwang, J.**, Tak, B., Lee, S. E., Kim, H. M., & Lee, H. (2022). Relationships among students' attitude toward mathematics, mindset, and teachers' mindset. *School Mathematics*, 24(4), 525–549. <https://doi.org/10.57090/sm.2022.12.24.4.525> (in Korean)
- Kim, H., Cho, H., Ko, E., Lee, D., Cho, J., Choi, J., Han, C., & **Hwang, J.** (2022). Development and application of assessment items for the diagnosis of difficulties in learning elementary mathematics. *Journal of the Korean School Mathematics Society*. 25(3), 261–278. <http://doi.org/10.30807/ksms.2022.25.3.003> (in Korean)
- Suh, J., **Hwang, J.**, Park, S., & Hand, B. (2022). Epistemic orientation toward teaching for knowledge generation: Conceptualization and validation of the construct. *Journal of Research in Science Teaching*, 59(9), 1651–1691. <https://doi.org/10.1002/tea.21769>
- Cikmaz, A., **Hwang, J.**, & Hand, B. (2022). Building a model(s) to examine the interdependency of content knowledge and reasoning as resources for learning. *Journal of the Korean Society of Mathematical Education Series D: Research in Mathematical Education*, 58(2), 135–158. <https://doi.org/10.7468/jksmed.2022.25.2.135>
- Kim, S. H. Rim, H., Kim, Y. M., **Hwang, J.**, Kim S.-M., & Kim, C.-M. (2022). A Delphi study to develop scenario-based assessment framework of mathematical attitude and practice. *Journal of Educational Research in Mathematics*, 32(2), 149–181. <https://doi.org/10.29275/jerm.2022.32.2.149> (in Korean)
- Choi, K., **Hwang, J.**, Jensen, J., & Hong, D. (2022). Teachers' use of assessment data for instructional decision making. *International Journal of Mathematical Education in Science and Technology*, 53(4), 1010–1017. <https://doi.org/10.1080/0020739X.2021.1880653>
- Hwang, J.**, Kim, J., Kwon, N. Y. (2022). Development of an instrument measuring elementary pre-service teachers' belief on teaching and learning mathematics. *Journal of the Korean Society of Mathematical Education Series C: Education of Primary School Mathematics*, 25(1), 43–55. <https://doi.org/10.7468/jksmec.2022.25.1.43> (in Korean)

- Hwang, J.** (2021). What topics have been studied in Korean mathematics education for 15 years: Latent topic modeling analysis. *Journal of the Korean Society of Mathematical Education Series D: Research in Mathematical Education*, 24(4), 313–335. <https://doi.org/10.7468/jksmed.2021.24.4.313>
- Hwang, J., & Shin, D.** (2021). Effects on equity in mathematics education: Multilevel analysis via the PISA 2015. *Journal of the Korean Society of Mathematical Education Series A: The Mathematics Education*. 60(4), 451-466. <https://doi.org/10.7468/mathedu.2021.60.4.451>
- Kim, D., Park, J., **Hwang, J.**, & Kim, S. (2021). Investigation on the limitations of the 2015 revised mathematics curriculum implementation. *Journal of Korea Society Educational Studies in Mathematics: School Mathematics*, 23(3), 387–410. <https://doi.org/10.29275/sm.2021.09.23.3.387> (in Korean)
- Ham, Y., & **Hwang, J.** (2021). Mathematics literacy and collaborative problem solving: Comparison between Korean and U.S. students in PISA 2015. *Journal of Educational Research in Mathematics*, 31(3), 299–320. <https://doi.org/10.29275/jerm.2021.31.3.299>
- Hong, D. S., Choi, K., **Hwang, J.**, & Runnalls, C. (2021). The pacing of volume lessons in American elementary textbooks compared to students' development in volume measurement. *Journal of the Korean Society of Mathematical Education Series D: Research in Mathematical Education*, 24(2), 83–109. <https://doi.org/10.7468/jksmed.2021.24.2.83>
- Hwang, J.** (2021). Understanding of mathematics terms with lexical ambiguity. *Journal of the Korean Society of Mathematical Education Series D: Research in Mathematical Education*. 24(2), 69–82. <https://doi.org/10.7468/jksmed.2021.24.2.69>
- Hwang, J., & Ham, Y.** (2021). Relationship between mathematical literacy and opportunity to learn with different types of mathematical tasks. *Journal on Mathematics Education*, 12(2), 199–222. <https://doi.org/10.22342/jme.12.2.13625.199-222>
- Fulmer, G. W., **Hwang, J.**, Ding, C., Hand, B., Suh, J., & Hansen, W. (2021). Development of a questionnaire on teachers' knowledge of language as an epistemic tool. *Journal of Research in Science Teaching*, 58(4), 459–490. <https://doi.org/10.1002/tea.21666>
- Hwang, J., & Ham, Y.** (2021). Relationships between self-efficacy and achievement moderated by teacher interaction: An international comparison study. *Mathematics Education Research Journal*, 33, 135–162. <https://doi.org/10.1007/s13394-019-00280-3>
- Choi, K., Seo, K., Hand, B., & **Hwang, J.** (2020). A theoretical model for the utilization of intellectual resources between science and mathematics: An empirical study. *Journal of the Korean Society of Mathematical Education Series A: The Mathematics Education*, 59(4), 405–420. <https://doi.org/10.7468/mathedu.2020.59.4.405>

- Hwang, J.** (2020). Instructional alignment observation protocol (IAOP) for implementing the CCSSM: Focus on the practice standard, “Model with mathematics”. *Journal of the Korean Society of Mathematical Education Series D: Research in Mathematical Education*, 23(3), 147–162. <https://doi.org/10.7468/jksmed.2020.23.3.147>
- Hwang, J.,** Ko, E.-S., & Tak, B. (2020). An analysis on home and school background factors in TIMSS 2015: Focus on students with negative attitude toward mathematics. *School Mathematics*, 22(3), 467–487. <https://doi.org/10.29275/sm.2020.07.22.3.467> (in Korean)
- Hwang, J.,** Choi, K., & Hand, B. (2020). Examining domain general use of reasoning across science and mathematics through performance on standardized assessments. *Canadian Journal of Science, Mathematics and Technology Education*, 20(3), 521–537. <https://doi.org/10.1007/s42330-020-00108-4>
- Hwang, J.,** & Hong, D. (2020). Teaching the intermediate value theorem with non-existing example. *Journal of the Korean Society of Mathematical Education Series D: Research in Mathematical Education*, 23(1), 1–12. <https://doi.org/10.7468/jksmed.2020.23.1.1>
- Hwang, J.,** & Choi, K. (2020). Relationships between emotional dispositions and mathematics achievement moderated by instructional practices: Analysis of TIMSS 2015. *International Journal of Mathematical Education in Science and Technology*, 51(1), 44–62. <https://doi.org/10.1080/0020739X.2019.1644680>
- Hong, D., Choi, K., **Hwang, J.,** & Runnalls, C. (2020). Examining initial curricular coverage of volume measurement: A comparative analysis. *International Journal on Social and Education Sciences*, 2(1), 1–19.
- Hong, D., Choi, K., Runnalls, C., & **Hwang, J.** (2019). How well aligned are common core textbooks to students’ development in area measurement? *School Science and Mathematics*, 119(5), 240–254. <https://doi.org/10.1111/ssm.12336>
- Hwang, J.** (2019). Relationships among locus of control, learned helpless, and mathematical literacy in PISA 2012: Focus on Korea and Finland. *Large-scale Assessment in Education*, 7(4), <https://doi.org/10.1186/s40536-019-0072-7>
- Hwang, J.,** & Ko, E.-S. (2018). Investigating Korean students’ different profiles of affective constructs and engagements: A latent profile Analysis on TIMSS 2015. *Journal of the Korean School Mathematics Society*, 21(3), 207–225. <https://doi.org/10.30807/ksms.2018.21.3.001> (in Korean)
- Hwang, J.,** Choi, K., Bae, Y., & Shin, D. (2018). Do teachers’ instructional practices moderate equity in mathematics and science literacy? An investigation of PISA 2012 and 2015. *International Journal of Science and Mathematics Education*, 16(Supplement 1), 25–45. <https://doi.org/10.1007/s10763-018-9909-8>

Hong, D., Choi, K., Runnalls, C., & **Hwang, J.** (2018). Do textbooks address known learning challenges in area measurement?: A comparative analysis. *Mathematics Education Research Journal*, 30(3), 325–354. <https://doi.org/10.1007/s13394-018-0238-6>

Hwang, J., Runnalls, C., Bhansali, S., Navaandamba, K., & Choi, K. (2017). “Can I do well in mathematics reasoning?” Comparing the US and Finland students’ attitude and reasoning via TIMSS 2011. *Educational Research and Evaluation*, 23(7–8), 328–348. <https://doi.org/10.1080/13803611.2018.1500293>

Hong, D., Choi, K., **Hwang, J.**, & Runnalls, C. (2017). Integral students’ experiences: Measuring instructional quality and instructors’ challenges in Calculus 1 lessons. *International Journal of Research in Education and Science*, 3(2), 424–437. <https://doi.org/10.21890/ijres.327901>

Ko, E., Lee, E., & **Hwang, J.** (2017). How do Korean elementary textbooks pace students’ learning to the learning trajectory? Focus on area and volume. *Journal of Educational Research in Mathematics*, 27(2), 207–225. (in Korean)

Edited Books

Nam, S., ..., **Hwang, J.** ... et al. (2021). Teacher education Milkit: KNU TALK Program to improve the distance education competency of pre-service teachers. Garam Publishing Company. (in Korea)

Book Chapters

Hwang, J., Ahn, J. S., & Kang, N. (under review). Integrated STEAM education centered on mathematics in South Korea. In J. Anderson and K. Makar (Eds.), *The Contribution of Mathematics to School STEM Education: Current Understandings*. Springer.

Fulmer, G.W., Hansen, W., **Hwang, J.**, Ding, C., Ash, A., Hand, B., & Suh, J. K. (2023). Development and application of a questionnaire on teachers' knowledge of argument as an epistemic tool. In W. Liu & W. Boone (Eds.), *Advances in Applications of Rasch Measurement in Science Education* (pp. 483–504). Springer. https://doi.org/10.1007/978-3-031-28776-3_18

Jung, S., & **Hwang, J.** (2016). Students’ understanding of statistical terms having lexical ambiguity. In D. Ben-Zvi & K. Maker (Eds.), *The teaching and learning of statistics: International Perspectives* (pp. 151–162). Springer. <https://doi.org/10.1007/978-3-319-23470-0>

Choi, K., & **Hwang, J.** (2015). Qualifications of teachers in specialized secondary STEM schools in Korea. In Kim, J., Han, I., Park, M., & Lee, J. (Eds.), *Mathematics education in Korea: Volume 2: Curricular and teaching and learning practices* (pp. 93–108). World Scientific Publishing Company.

 CONTRACTS, GRANTS AND SPONSORED RESEARCH

Funded

Dong Hwan Lee (Principal Investigator), **Hwang, Jihyun** (Investigator) et al. Research on the development of mathematics affective achievement evaluation indicators for the internalization of Gyeongnam Mathematics Culture Center operations. Sponsored by Gyeongnam Mathematical Cultural Center, ₩19,000,000 (May 1, 2023 to November 30, 2023).

Sun Hee Kim (Principal Investigator), **Hwang, Jihyun** (Investigator) et al. Development and application of scenario-based online instrument measuring ‘attitude and practice’ competency in mathematics. Sponsored by the Korea Foundation for the Advancement of Science and Creativity, ₩281,800,000 (July 1, 2021 to June 30, 2023).

Hwa Young Lee (Principal Investigator), **Hwang, Jihyun** (Investigator) et al. A study on ways to improve students’ mathematical affective achievement. Sponsored by the Korea Foundation for the Advancement of Science and Creativity, ₩35,000,000 (June 1, 2020 to November 20, 2021).

Kim, Dong Won (Principal Investigator), **Hwang, Jihyun** (Investigator) et al. A field survey on 2015 revised national mathematics curriculum. Sponsored by the Korea Foundation for the Advancement of Science and Creativity, ₩50,000,000 (July 1, 2020 to December 31, 2020).

Kim, Hee Jung (Principal Investigator), **Hwang, Jihyun** (Investigator) et al. Developing assessment items to diagnose elementary mathematics learning difficulties. Sponsored by the Korea Foundation for the Advancement of Science and Creativity, ₩65,000,000 (July 1, 2020 to December 31, 2020).

Hwang, Jihyun (Principal Investigator). Building a model(s) to examine the interdependency of content knowledge and reasoning as resources for learning. Sponsored by the Iowa Measurement Research Foundation (IMRF), \$35,809 (August 1, 2019 to May 31, 2020).

 CONFERENCE ACTIVITIES

Selected International/National Conference Presentations

Kim, S. H. Rim, H., Kim, Y. M., **Hwang, J.**, Kim S.-M., & Kim, C.-M. (2023, July). *Student feedback on scenario-based assessments to measure attitudes and practices for mathematics*. Paper presented at the 60th KSESM Conference, Seoul, South Korea. (in Korean)

Ka, Y., Song, H., & Hwang, J. (2023 April). *Exploring mathematical modeling opportunities in Korean high school textbooks: analysis of assignments related to exponential and*

- logarithmic functions*. Paper presented at the 2023 Spring Conference of the Korean Society of Mathematical Education, Jeonju, South Korea. (in Korean)
- Jee, M., & **Hwang, J.** (2022, December). *Understanding lesson objectives and task selection based on the mathematical beliefs of a middle school math teacher*. Paper presented at the 2022 Fall Conference of the Korean Society of Mathematical Education, Seoul, South Korea. (in Korean)
- Kim, S. H. Rim, H., Kim, Y. M., **Hwang, J.**, Kim S.-M., & Kim, C.-M. (2022, November). *Delphi survey for reviewing items of an attitude and practice assessment tool based on scenario in math curriculum*. Paper presented at the 59th KSESM Conference, Chuncheon, South Korea. (in Korean)
- Kim, I., Choi, I., Jung, H., & **Hwang, J.** (2022, October). *A study on the provision of customized feedback using the National Assessment of Educational Achievement*. Paper presented at the 2022 Fall Conference of the Korean Society for Educational Evaluation. (Online only, in Korean)
- Hwang, J.** (2021, December). *Changes in pre-service teachers' understanding of language as an epistemic tool via a course of mathematics logic and writing*. Paper presented at the 2021 International Conference of Joint Societies for Mathematics Education: KSME & KSESM, Incheon, South Korea.
- Choi, K., **Hwang, J.**, Jensen, J., Hong, D. S., & Cox, W. (2021, July). *Changes in mathematical knowledge for teaching and belief on practices through professional development based on reasoning-modeling approach*. Paper presented at the 14th International Congress on Mathematical Education (ICME), Shanghai, China.
- Hwang, J.**, & Choi, K. (2021, July). *Predicting College Major Choice in STEM with Students Data at Grades 9 and 11*. Paper presented at the 14th International Congress on Mathematical Education (ICME), Shanghai, China.
- Hwang, J.**, Kim, J. H., & Kwon, N. Y. (2021, April). Instrument development to measure pre-service teachers' understanding of student-centered instruction. Paper presented for the 2021 Spring Conference of KSME, Daegu, Korea. (Online conference, in Korean)
- Ham, Y., & **Hwang, J.** (2020, December). *Mathematical literacy and collaborative problem-solving: Comparison between Korea and U.S. students in PISA 2015*. Paper accepted for the 2020 International Conference of KSME, Seoul, Korea. (Online conference)
- Ham, Y., & **Hwang, J.** (2020, April). *Collaborative problem solving in PISA 2015: Convergent validity evidence*. Paper accepted for the 2020 American Educational Research Association (AERA) Annual Meeting, San Francisco, CA. (Conference canceled)

- Fulmer, G., **Hwang, J.**, Ding, C., Hand, B., & Hansen, W. (2020, April). *Teachers' understanding about dialogical interaction as an epistemic tool: Development of questionnaire*. Paper accepted for the 2020 American Educational Research Association (AERA) Annual Meeting, San Francisco, CA. (Conference canceled)
- Fulmer, G., Suh, J., Hand, B., **Hwang, J.**, Ding, C., & Hansen, W. (2020, March). *Developing teacher instruments and protocol to study teachers' knowledge of language, argument, and dialogic interaction as epistemic tools*. Paper accepted for the 2020 National Association for Research in Science Teaching (NARST) Annual International Conference, Portland, OR. (Conference canceled)
- Hwang, J.**, Fulmer, G., Hand, B., & Suh, J. (2020, March). *Preliminary baseline results of teachers' epistemic orientation and knowledge of epistemic tools*. Paper accepted for the 2020 National Association for Research in Science Teaching (NARST) Annual International Conference, Portland, OR. (Conference canceled)
- Hong, D., Choi, K., **Hwang, J.**, & Runnalls, C. (2019, April). *Analyzing curricular coverage of volume measurement: A comparative analysis*. Paper presented at the 2019 American Educational Research Association (AERA) Annual Meeting, Toronto, Canada.
- Jensen, J., Choi, K., & **Hwang, J.** (2019, April). *The hindrance of rule-based beliefs on teacher questioning*. Paper presented at the 2019 American Educational Research Association (AERA) Annual Meeting, Toronto, Canada.
- Hong, D. S., Choi, K., Runnalls, C., & **Hwang, J.** (2018, November). *The initial treatment of the area measurement in the selected US and Korean elementary textbooks*. Paper presented at the 40th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Greenville, SC.
- Hwang, J.**, & Ko, E.-S. (2018, April). *Korean students' profiles of motivational constructs and engagement*. Paper presented at the 2018 National Council of Teachers of Mathematics (NCTM) Research Conference, Washington, DC.
- Hwang J.**, & Choi, K. (2018, April). *Does instruction moderate the relationships between SES and achievement? Investigation through PISA 2012 and 2015*. Paper presented at the 2018 American Educational Research Association (AERA) Annual Meeting, New York, NY.
- Hong, D. S., Choi, K., **Hwang, J.**, & Runnalls, C. (2018, April). *Going 'by the book': The pacing of area in common core aligned American textbooks compared to learning trajectories*. Paper presented at the 2018 American Educational Research Association (AERA) Annual Meeting, New York, NY.
- Hwang, J.** (2017, October). *Relationships between locus of control, learned helplessness through PISA 2012: Focus on Korea and Finland*. Paper presented at the 39th Annual

Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Indianapolis, IN.

Hong, D., Choi, K., **Hwang, J.**, & Runnalls, C. (2017, April). *Integral students' experiences: measuring instructional quality in calculus I lessons*. Paper presented at the 2017 American Educational Research Association (AERA) Annual Meeting, San Antonio, TX.

Hwang, J., Choi, K., & Jensen, J. (2017, April). *Effects of reasoning and modeling approach on mathematics achievement*. Paper presented at the 2017 National Council of Teachers of Mathematics (NCTM) Research Conference, San Antonio, TX.

Choi, K., **Hwang, J.**, & Jensen, J. L. (2015, August). *Teachers mathematical knowledge for teaching to narrow a gap between middle school mathematics teachers' perception and practice on student-centered instruction*. Paper presented at the 2nd Argument-Based Inquiry Conference, Spokane, WA.

Choi, K., **Hwang, J.**, & Jensen, J. L. (2014, July). *How teacher use cognitive diagnosis model data for instructional decision making*. Paper presented at the 38th Psychology of Mathematics Education (PME), Vancouver, British Columbia, Canada.

Hwang, J., McAninch, M., & Kwaka, D. (2014, April). *Revealing secret: How to handle the ambiguous case*. Lecture presented at the 2014 National Council of Teachers of Mathematics (NCTM) Annual Meeting and Exposition, New Orleans, LA.

Choi, T., **Hwang, J.**, & Susadya, L. (2014, April). *iPad quest for functional relations with dynagraph*. Lecture presented at the 2014 National Council of Teachers of Mathematics (NCTM) Annual Meeting and Exposition, New Orleans, LA.

Selected International/National Conference Posters

Hwang, J. (2022, September). *Mathematics achievement gap and changes in parental support during the COVID-19 pandemic*. Poster presented at the 2022 Busan Education Longitudinal Study conference. (Online only, in Korean).

Hwang J., & Ham, Y. (2019, November). *Opportunity to learn: Different types of tasks and mathematical literacy*. Poster presented at the 41st Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), St. Louis, MO.

Hwang, J., Choi, K., Jensen, J., Hong, D., & Meiners, A. (2019, April). *Effects of the Iowa Mathematics Proficiency Project on mathematics achievement of fifth graders*. Poster presented at the 2019 American Educational Research Association (AERA) Annual Meeting, Toronto, Canada.

Hwang, J., & Ham, Y. (2019, April). *Moderating effect of teacher interaction on the relationships between confidence and achievement in mathematics*. Poster presented at

the 2019 American Educational Research Association (AERA) Annual Meeting, Toronto, Canada.

Choi, K., **Hwang, J.**, Jensen, J., Meiners, A., & Wu, Y., (2019, April). *Mathematical reasoning and modeling: a way to change teacher knowledge*. Poster presented at the 2019 National Council of Teachers of Mathematics (NCTM) Research Conference, San Diego, CA.

Hwang, J., Choi, K., Hand, B. (2018, November). *The relationship between cognitive resources in mathematical modeling and mathematics achievement*. Poster presented at the 40th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Greenville, SC.

Hong, D., Choi, K., **Hwang, J.**, & Runnalls, C. (2017, April). *How well aligned are Common Core textbooks to area Learning trajectory?* Poster presented at the 2017 American Educational Research Association (AERA) Annual Meeting, San Antonio, TX.

Hwang, J., Choi, K., Hand, B. (2016, November). *Relationships among mathematics and science reasoning practices*. Poster presented at the 38th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Tucson, AZ.

Hong, D., Choi, K., **Hwang, J.**, Runnalls, C., Bhansali, S., Meiners, A., & Payne, A. (2016, November). *How well aligned are common core textbooks to learning trajectories in geometry*. Poster presented at the 38th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Tucson, AZ.

Hong, D., Choi, K., Bhansali, S., **Hwang, J.**, & Runnalls, C. (2016, November). *Integral students' experiences: Measuring instructional quality in calculus 1 lessons*. Poster presented at the 38th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Tucson, AZ.

Hwang, J., Hong, D., & Choi, K. (2016, July). *Use of instructional examples in calculus classroom*. Paper presented in the 13th International Congress on Mathematical Education (ICME), Hamburg, Germany.

Bhansali, S., **Hwang, J.**, & Choi, K. (2016, July). *Effects of a professional development program on critical thinking skills of fifth-grade students*. Poster presented at the 13th International Congress on Mathematical Education (ICME), Hamburg, Germany.

Meiners, A., **Hwang, J.**, & Choi, K. (2016, July). *Relationships of cognitive domains: Focus on reasoning and applying in mathematics and science*. Poster presented at the 13th International Congress on Mathematical Education (ICME), Hamburg, Germany.

Hwang, J., Runnalls, C., Bhansali, S., Choi, K. (2016, April). *Relationship between students' attitude and reasoning via TIMSS 2011*. Poster presented at the 2016 National Council of Teachers of Mathematics (NCTM) Research Conference, San Francisco, CA.

Choi, K., Hong, D. S., **Hwang, J.,** Hua, Y. & Woods-Groves, S. (2016, April). *When knowing basic skills and procedures is not enough*. Poster presented at Annual Meeting of American Educational Research Association, Washington, DC.

Hwang, J., & Hong, D. (2015, November). *Use of examples in teaching calculus: focus on continuity*. Poster presented at the 37th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), East Lansing, MI.

Hwang, J., Choi, K., & Hand, B. (2015, November). *How are cognitive domains correlated in mathematics and science?* Poster presented at the 37th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), East Lansing, MI.

Hwang, J., Choi, K., & Hand, B. (2014, July). *A model of cognitive domains in mathematics and science based on conditional probabilities*. Poster presented at the 38th Psychology of Mathematics Education (PME), Vancouver, British Columbia, Canada.

Non-refereed Conference Presentation or Invited Lecture

Hwang, J. (2023, April). *Why abduction is important in mathematics education?* Lecture presented at 2023 KMS Spring Meeting, Daejeon, South Korea.

Hwang, J. (2022, January). *There is safety in numbers: Review on quantitative research in Korea*. Lecture presented at the 12th KSESM Mathematics Education Colloquium. (Online)

Hwang, J. (2016, December). *International comparison studies: Opportunities for mathematics educators*. Lecture presented at the Department of Mathematics Education, Seoul National University, Seoul, South Korea.

AWARDS AND ACADEMIC HONORS

- 2018 Outstanding Doctoral Dissertation Award, Iowa Academy of Education
H.D. Hoover Excellence Scholarship, UI
Rolland Ray Award, UI
- 2017 Graduate Summer Fellowship, UI
- 2016 – 2017 Graduate Special Assistantship, UI
- 2016 Graduate Student Senate (GSS) Travel Fund Award, UI
Graduate Student Research Award, UI
- 2014 Hugh Vollrath Ross Scholarship, UI

2014 – 2017	Audrey Qualls Travel Award, UI Office of the Dean Travel Award, UI
2008 – 2010	Superior Academic Performance, SNU
2007	Scholarship Student, Chunjae Education Inc., Seoul, South Korea Honor Student, SNU
2003 – 2004	Superior Academic Performance, SNU

RESEARCH EXPERIENCE

2012 – 2017	Research Assistant, Teaching and Learning, University of Iowa <i>Research Project:</i> Iowa Mathematics Proficiency Project (iMaP ²), MSP <ul style="list-style-type: none"> • Supporting research done by mathematics education faculty members • Preparing the professional development programs in summer • Analyze data collected in iMaP²
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PROFESSIONAL TRAINING

Professional Development

2018	edx, Inc. (MOOC platform) <ul style="list-style-type: none"> • Machine Learning for Data Science and Analytics (ColumbiaX - DS102X) <p><i>Microsoft Professional Program for Data Science</i> (Certificate Number: 8ce25968-aa26-446f-8fe4-a23ae81d3210)</p> <ul style="list-style-type: none"> • Introduction to Data Science (Microsoft – DAT101x) • Querying Data with Transact-SQL (Microsoft - DAT201x) • Analyzing and Visualizing Data with Excel (Microsoft - DAT206x) • Introduction to R for Data Science (Microsoft - DAT204x) • Essential Statistics for Data Analysis using Excel (Microsoft - DAT222x) • Data Science Essential (Microsoft - DAT203.1x) • Principles of Machine Learning (Microsoft - DAT203.2x) • Programming in R for Data Science (Microsoft - DAT209x) • Analyzing Big Data with Microsoft R (Microsoft - DAT213x) • Microsoft Professional Capstone: Data Science (Microsoft - DAT102x)
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Summer Short Course

2016	Columbia University, NY <i>Course:</i> Cognitive Diagnosis Modeling: A General Framework Approach and Its Implication in R
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LICENSURES AND CERTIFICATIONS

- 2008 Secondary School Teacher (Grade II) of Mathematics
- Qualified for teaching mathematics in Korean secondary schools

TEACHING EXPERIENCE

Graduate

- 2017 – 2018 Adjunct Lecturer, University of Iowa
Course: STEM research and leadership seminar (online)

Undergraduate

- 2010 Teaching Assistant, Seoul National University, Seoul, South Korea
Courses: Calculus 1, Calculus 2
- Leading a discussion section and graded students' homework

K-12

- 2011 – 2012 Part-time Mathematics Teacher, Seocho High School, Seoul, South Korea
Course: Advanced Mathematics

- 2011 After-School Instructor, Kyungbok Girls' High School, Seoul, South Korea
Course: Logic and Writing in Mathematics

After-School Instructor, Seon Yoo High School, South Korea
Course: Logic and Writing in Mathematics

Part-time Mathematics Instructor, Backindaejang Institute, Seoul, South Korea
Course: Academic Discussion in High School Mathematics

- 2007 Representative Student Teacher, Seoul National University Middle School, South Korea
- After student-teaching practicum, Leading the representative class of mathematics student teachers (multiplication theorem of probability)

OTHER EXPERIENCE

- 2011 – 2012 Hanbit Social Welfare Center, Seoul, South Korea
 Volunteer Mentor and Mathematics Teacher
- Teaching mathematics to North Korean defectors' child

- 2008 – 2010 Seoul National University, Seoul, South Korea
 Department Academic Assistant, Department of Mathematics Education

- Taking charge of the administration affairs for budgets and academic affairs
- Preparing a colloquium for mathematical education sponsored by the department
- Taking charge of all kinds of events for the alumni association
- Supporting a symposium sponsored by the Korea Society of Educational Studies in Mathematics (2008, May)

- 2008 – 2010 Seoul National University, Seoul, South Korea
 Non-Academic Assistant for a Professional Development Program
- Performing administrative duties for the in-service secondary teacher training programs provided by Seoul National University and the Gyeonggi Provincial Office of Education, South Korea
- 2004 – 2006 Republic of Korea Army, Inje, South Korea

OTHER SKILLS

Software

- SPSS, R, MATLAB, Mplus, HLM, EXCEL
- LaTeX

Language

- Korean and English

REFERENCES

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