QIU ZHONG

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EDUCATION

2018-Present Ph.D. in Curriculum & Instruction, Indiana University Bloomington.
Major: Science Education
Minor: Philosophy of Science for Education

2013 M.S. in Environmental Science
Central China Normal University, Wuhan, China.

2010 B.S. in Applied Chemistry
Northwest Agriculture & Forestry University, Xi'An, China

AREAS OF EXPERITISE

Philosophy of Science, STEM Education, Feminism in Science Education, Environmental Education, Science Teacher Education & Professional Development, Qualitative Methods

RESEARCH APPOINTMENTS & EXPERIENCE

INDIANA UNIVERSITY

2021-2022 *Graduate Research Assistant*

- Project: The Notion of Failure and Maker Programming for Youth: Supporting the Professional Development, Reflection, and Learning of Informal Educators. NSF funding.
- Worked with Dr. Adam Maltese and Dr. Amber Simpson. Responsibilities include literature review, attending regular museum educators' meetings, data analysis, video data coding development, and workshop preparation.

2020 *Graduate Research Assistant*.

- Project: Online Practice Suite: Practice Space, Simulations and Virtual Reality Environments for Preservice Teachers to Learn to Facilitate Argumentation Discussions in Math and Science. NSF funding.
- Worked with Dr. Meredith Park Rogers, Dr. Dionne Cross Francis and Dr. Adam Maltese. Responsibilities include interviewing preservice teachers, data collection, and logistics.

2019-2020 *Graduate Research Assistant*.

- Project: Teacher Cognition and Learning about Incorporating Science Representations in Elementary Classrooms. Funding from James McDonnell Foundation.
- Worked with Dr. Joshua Danish, Dr. Meredith Park Rogers, Dr. Celeste Nicolas, Dr. Cindy Hmelo-Silver and Dr. Dionne Cross Francis. Responsibilities include developing data coding system, data analysis, journal paper writing, and conference proposal writing and presenting.

2019-2020 *Researcher*.

- Project: Engineering a Community-Family Partnership: Developing a Program Aimed at Making and Design Practices in Home Environments. NSF funding.
- Worked with Dr. Adam Maltese and Dr. Amber Simpson. Responsibilities include facilitating family engineering activity, data recording, and data analysis.

2019-2020 *Researcher*.

- Project: Spontaneous Mathematical Moments between Caregiver and Child during an Engineering Design Project. Sub-project of Family Engineering project. NSF funding.
- Worked with Dr. Amber Simpson. Responsibilities include conceptualizing research idea, data analysis, writing journal paper.

2018-2021 *Researcher*.

- Project: Community of Practice on Self-Study (CoPSS): Supporting Doctoral Science and Math Education Students' Teaching.
- Worked with Dr. Meredith Park Rogers, Dr. Dionne Cross Francis and other doctoral colleagues. Responsibilities include attending each session's discussion, data recording, data analysis, research question development, conference proposal writing and presenting, and journal paper writing.

2019-2021 *Researcher*.

- Project: Developing Science Education Doctoral Students' Identity as NOS Educators.
- Worked with Dr. Valarie L. Akerson and other doctoral colleagues. Responsibilities include attending each session's discussion, data analysis, conference proposal writing and presenting, and journal paper writing.

GRANT

2019-2021 *Principal Investigator*.

- Project: Investigating Chinese Pioneering STEM Educators' Beliefs and Practices on STEM Education.
- Funding: E. Wayne Gross Fund. Indiana University School of Education. $2500.

2019-2020 *Co-Principal Investigator.*

- Project: From Maker Space to Open Space: Designing a Low-cost E-textile Workshop for Migrant Girls in China. PI: Adam Maltese, Co-PI: Qiu Zhong, Jing Yang, Xintian Tu & Chaoran Wang.

- Funding: Martha and Tilaar Fund for the Study of Global Issues of Women's Empowerment and Education. Indiana University School of Education. $10,000.

TEACHING EXPERIENCE

INDIANA UNIVERSITY

Associate Instructor

- Q200: Introduction to Scientific Inquiry — Spring 2021, Fall 2020, Fall 2019
- M446: Secondary Science Teaching Method — Fall 2022, Spring 2023

Saturday Science Coordinator (community science program for children) — Spring 2020

Instructor of Saturday Science — Spring 2019

Teaching Assistant for Q200 — Fall 2018, Spring 2019

CENTRAL CHINA NORMAL UNIVERSITY

Teaching Assistant at Department of Life Sciences. — 2010-2012

- Responsibilities include assisting undergraduate lab classes, providing support for undergraduate thesis project, experimental design, thesis writing, and assisting undergraduates in research competition project (National College Student Innovation Competition)

K-12 TEACHING

Chemistry Teacher, Grade 7-12. **License**: High School Chemistry Teacher, China.

- Beijing Huan Yu Jiu Tian Institute. Beijing, China. — 2017-2018
- Beijing Royal School. Beijing, China. — 2015-2017
- Wuchang Experimental High School. Group Leader. Wuhan, China. — 2012-2015

Volunteer Teacher, Waist Drum Dancing.

- GaoXing Primary School, Xi'An, China. — 2006-2008

PUBLICATION

Under Review:

Zhong, Q., Liu, C., Maltese, A.V., & Yang, J. (2022). Wading across the river by feeling the stones: Chinese pioneering STEM educators' understanding and practice of STEM education. *Educational Research for Policy and Practice*.

Phillips, A., Rahman, S., **Zhong, Q.**, Ariyartne, T., Cesljarev, C., Liu, C., Akerson, V. L., &

McClain, J. (2021). Pedagogical content knowledge for nature of science development among science education doctoral students: Preparing NOS teacher educators. *Journal of Research in Science Teaching*.

Manuscripts in preparation:

Zhong, Q., Rogers, M.P., Nicholas, C., Danish., J., & Hmelo-silver, C. An elementary teacher's development of using representations: Comparing two years' teaching in earth science unit.

Zhong, Q., Liu, C., Maltese, A.V. What is integration in STEM education? -Perspectives from a science teacher, principal and superintendent.

Published Journal Articles:

McClain, J., Cesljarev, C., **Zhong, Q**., Rahman, S., Liu, C., Phillips, A., Ariyaratne, T., & Akerson, V. L. (2022). Developing nature of science ideas and orientations at the graduate level: Better late than never. *International Journal on Studies in Education (IJonSE), 4(2),* 155-170. https://doi.org/10.46328/ijonse.82

Simpson, A., **Zhong, Q**. & Maltese, A.V. (2022). Spontaneous Mathematical Moments between Caregiver and Child during an Engineering Design Project. *Early Childhood Education Journal*. 1-12. https://doi.org/10.1007/s10643-021-01296-w.

Cross Francis, D., Bharaj, P. K., Liu, J., Phillips, A., Park Rogers, M., **Zhong, Q.**, Cesljarev, C., Lloyd, K. (2021). Questioning our credibility: An exploration of the professional identity development of mathematics teacher educators. *Mathematics, 10*(1), 66.

McClain, J., Nicholas, C., Pierce, E., Zimmerman, K., Danish, J.A., & **Zhong, Q**. (**In press**). Using multiple representations to shine light on unobservable Earth science phenomena. *Science and Children*.

Zhang, C., Yang, X., He, Z., **Zhong, Q.**, Guo, J., Hu, XJ., Xiong, L*., Liu, DL. (2014). Influence of BBP Exposure on Nervous system and antioxidant system in Zebrafish. *Ecotoxicology*, 23(10): 1854-1857

Li, Q., Ji, X., **Zhong, Q**., Huang, X., & Xiong, L. (2013). Ultrafine $ZnFe_2O_4$ nanocrystals interacting with proteins. *Chinese Journal of Inorganic Chemistry*, 11: 2375-2381. [In Chinese]

Wang, R., Lin. Y., Sun, X., **Zhong, Q**. (2013). Toxicity of Quantum dot CdS on *Scenedesmus obliquus*. *Journal of Agro-Environmental Science*, 32(3): 503-507. [In Chinese]

Yang, X., Zhang, C., He, Z., Hu, X., Guo, J., **Zhong, Q**. & Liu, D. (2013). Isolation and characterization of two n-butyl benzyl phthalate degrading bacteria. *International Biodeterioration & Biodegradation*, *76*, 8-11.

Chen, H., Yang, X., Zhang, K., **Zhong, Q**., Guo, J., Wang, P., Xiong, L., & Liu D. (2013). Isolation and characterization of a highly efficient BBP-degrading bacterium. *Environmental Science*, 07: 2882-2888.

Zhong, Q., He, Z., Dai A. (2012). Toxicity of Nanoparticulate CeO_2 on *Scenedesmus obliquus*. *Journal of Agro-Environmental Science*, 31(2): 299-305. [In Chinese]

Guo, J., Yang, X., Zhang, C., He, Z., **Zhong, Q**. (2012). Exploring the Estrogenicity of Carbofuran and Cypermethrin. *Agrochemicals*, 2012, 51(2): 105-108. [In Chinese]

He, Z., Mu, W., Zhou, Q., Yang X., Zhang, C., Hu, Q., Hu, X., Guo, J., **Zhong, Q**., Xiong, L., & Liu, D. (2011). Toxic Effects of $HgCl_2$ on SOD and AChE of Activities and Gene Transcription of Zebrafish. *Asian Journal of Ecotoxicology*, 06: 649-654. [In Chinese]

Book Chapters:

Zhong, Q., Ariyaratne, T., Yang, J., Rahman, S., & Akerson, V. (2021). It's hard to focus on the content knowledge: Understanding a doctoral student instructor's emotional challenges of teaching science during the COVID-19 pandemic. In V. L. Akerson & I. S. Carter (Eds.), *Science Education during the COVID-19 Pandemic: Tales from the Front Lines* (pp. 93-116). ISTES Organization.

Book Review:

Maltese, A.V., **Zhong, Q**. (July 26, 2021). Review of the book T*he Next Generation of STEM Teacher: An Interdisciplinary Approach to Meet the Needs of the Future*, by Patrick M. Jenlink & Karen Embry Jenlink. Teachers College Record, https://www.tcrecord.org ID Number: 23800.

CONFERENCE PPRESENTATIONS

Presented:

Tu, X., Yang, J., **Zhong, Q.,** Wang, C., & Maltese, A. (2022, June). E-textile Fashion: Designing Maker Activity for Chinese Migrant Girls. International Conference of the Learning Sciences 2022. Volume ICLS Proceedings, 2130-2031, Hiroshima, Japan (Online): International Society of the Learning Sciences.

Akerson, V. L., Ariyartne, T., Cesljarev, C., Liu, C., McClain, J., Phillips, A., Rahman, S., **Zhong, Q.** (2021, October) *Developing Nature of Science Ideas and Orientations at the Graduate Level: Better Late Than Never*. Panel presented at the annual International Conference on Social and Education Sciences (IConSES). Chicago: IL.

Simpson, A., & **Zhong, Q** (June, 2021). Spontaneous Mathematical Moments Between Caregiver and Child during an Engineering Design Project. 42nd Annual Meeting of the North

American Chapter of the International Group for the Psychology of Mathematics Education. Virtual Space, Mazatlán, Mexico.

Zhong, Q. (2021, April). Investigating Chinese STEM Educators' Understanding and Practices of STEM Education (E. Wayne Gross grant result report) at Science Education Research Symposium. Bloomington, IN.

Zhong, Q., Nicholas, C., Rogers, M. P., Danish, J. & Hmelo-Silver C. (2021, January). Exploring An Elementary Science Teacher's Knowledge and Practice with Science Representations. Annual Meeting of Association for Science Teacher Education. Virtual Space, Salt Lake City, UT.

Phillips, A., McClain, J., Rahman, S., Cesljarev, C., **Zhong, Q**., Liu, C., Ariyaratne, T., Akerson, V. (2021, January). Pedagogical Content Knowledge for Nature of Science Development among Science Education Doctoral Students. Annual Meeting of Association for Science Teacher Education. Virtual Space, Salt Lake City, UT.

Rogers, M. P., Cross Francis, D., CeslJarev, C., Gerber, A., Phillips, A., & **Zhong, Q**. (2021, January). "How do we show we are credible?": Understanding the Contributions of Varied Experiences and Perceived Expectations Towards Developing a Professional Identity as A Teacher Educator. Annual Meeting of Association for Science Teacher Education. Virtual Space, Salt Lake City, UT.

McClain, J., **Zhong, Q**., Pierce, E. & Zimmerman, K. (2020, February). "*It's above me now*": Using representations to Improve Student Engagement of Earth and Space in Elementary Classrooms. Annual Conference of Hoosier Association of Science Teachers. Indianapolis, IN.

McClain, J., **Zhong, Q**., Pierce, E. & Zimmerman, K. (2020, February). "*Beyond Control, Alt and Delete*": How to use technology to improve student scientific learning. Annual Conference of Hoosier Association of Science Teachers. Indianapolis, IN.

Rogers, M. P., Nicholas, C., Danish, J., Gerber, A., McClain, J., Phillips, A., Stiso, C. & **Zhong, Q.** (2020, January)**.** Elementary Science Teachers Developing Perceptions of the Role of Representations in Teaching Science. Annual Meeting of Association for Science Teacher Education. San Antonia, TX.

Zhong, Q. (2019, April). Investigating Chinese STEM Educators' Beliefs and Orientations on Understanding STEM (E. Wayne Gross grant proposal) at Science Education Research Symposium. Bloomington, IN.

Accepted:

Nicholas, C., Rogers, M. P., Danish, J., **Zhong, Q.**, Stiso, C., Phillips, A., McClain, J. & Gerber, A. (April, 2020). Rural Elementary Teachers' Perceptions about Incorporating

Representations into Their Science Teaching. (**Conference cancelled**) Annual International Conference of National Association for Research in Science Teaching. Portland, OR.

Rejected:

Zhong, Q., Liu, C., Maltese, A.V. (2022, March). Investigating Chinese pioneering STEM educators' understanding and practice of STEM education. Annual International Conference of National Association for Research in Science Teaching. Vancouver, British Columbia, Canada.

Zhong, Q., Ariyaratne, T., Yang, J., Rahman, S., & Akerson, V. (2022, March). It's hard to focus on the content knowledge: Understanding a doctoral student instructor's emotional challenges of teaching science during the COVID-19 pandemic. In symposium *Teaching Science in a Virtual Environmental During the COVID- 19 Pandemic*. Annual International Conference of National Association for Research in Science Teaching. Vancouver, British, Columbia, Canada.

Zhong, Q., Nicholas, C., Rogers, M. P., Danish, J. & Hmelo-Silver, C. (April, 2021). Examining the Trajectory of an Elementary Teacher's Practice with Using Science Representations Across Coached Lessons. Annual International Conference of National Association for Research in Science Teaching. Virtual Space.

Yang, J., Tu, X., **Zhong, Q.**, Wang, C. & Maltese., A. (June, 2020). E-textile Fashion: Engage Chinese Migrant Girls in Integrated STEAM Workshop. Annual International Conference of the Learning Sciences. Nashville, Tennessee.

PROFESSIONAL DEVELOPMENT

2022 June — Education for Environmental Change: A three-day workshop for Inservice Teachers. Indiana University Bloomington, IN.
- Workshop designer, facilitator, and researcher.

2022 March — Professional Development of Understanding and Learning from Failure for Museum Educators (3 days). Minneapolis Art Museum, MN.
- Workshop facilitator and researcher.

2022 February — Professional Development of Teaching Climate Change Series-Educating for Environmental Change: Climate Modeling (6 hr.). Indiana University Bloomington, IN.
- Workshop designer, instructor, and facilitator.

2021 November — Professional Development of Teaching Climate Change Series-Educating for Environmental Change: Natural Disaster (6 hr.). Indiana University Bloomington, IN.
- Participant.

2021 October Professional Development of Teaching Climate Change Series-Educating for Environmental Change: Geoengineering (6 hr.). Indiana University Bloomington, IN.
- Participant.

2019 Summer Exchanging Ideas about Teaching Science: Summer Workshop for 20 Science Teachers from Zhejiang Province, China. Indiana University Bloomington, IN.
- Workshop designer and facilitator.

2019 Summer Professional Development for Elementary Science Teachers' Conceptions of Representations in Science Teaching. Indiana University Bloomington, IN.
- Workshop facilitator and researcher.

2019 Summer Designing and Making Wearable Technology: A STEM Workshop for 24 Students from Xinjiang province, China. Indiana University Bloomington, IN.
- Workshop designer, instructor, facilitator and researcher.

2019 August Introduction to E-textile and How to Apply It in Science Teaching: A Workshop for Elementary Teachers: Indiana University Bloomington, IN.
- Workshop designer and instructor.

2016 April Cambridge A Level Exam Reform- Chemistry. Chengdu Shi Shi High School. Chengdu, China.
- Participant.

2014 March Pearson UK Curriculum and Instruction: Professional Development for A-Level Chemistry Teaching. Chengdu, China.
- Participant.

2013 October Pearson UK GCE Chemistry Coursework – Units 3 and 6: Professional Development for A-Level Teaching. Wuhan, China.
- Participant.

2012 May Adolescent Sexual Health Education Workshop. Sexology Association, Central China Normal University, Wuhan, China.
- Participant.

AWARDS & HONORS

2020 Neatour-McGlasson fellowship award. Indiana University Bloomington $5000.

2019-2020 International Peace Scholarship, nominated. $4000.

2019	Neatour-McGlasson fellowship award. Indiana University Bloomington. $5000.
2014	Teacher of the Year, Wuchang Experimental High School. Wuhan, China.
2011	Outstanding Teaching Assistant, Central China Normal University, Wuhan, China.
2012	First-class Excellent Academic scholarship, Central China Normal University, Wuhan, China.
2011	Second-class Excellent Academic Scholarship, Central China Normal University, Wuhan, China.
2010	Third-class Excellent Academic Scholarship, Central China Normal University, Wuhan, China.
2009	Miyoshi Students of College of Science, Northwest Agriculture & Forestry University, Xi'An, China.
2008	Miyoshi Students of College of Science, Northwest Agriculture & Forestry University, Xi'An, China.

SERVICE

2019	Volunteer for Indiana Science Olympiad. Indiana University, Bloomington, IN.
2019	Co-organizer for the 2019 Indiana University Science Education Research Symposium, Indiana University, Bloomington, IN.

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Association for Science Teacher Education (ASTE)
National Association of Research in Science Teaching (NARST)
American Educational Research Association (AERA)
Hoosier Association of Science Teachers, Inc. (HASTI)