

HUI-HUI WANG*Curriculum Vitae*

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EDUCATION

Doctor of Philosophy, University of Minnesota, 2012, Major: Curriculum and Instruction in Science Education; Specialty: STEM Integrated Education

Master of Science, Southern Oregon University, 2005, Major: Environmental Education; Specialty: Non-formal Education

Bachelor of Science, National Pingtung University of Science and Technology, 2001, Major: Biology and Wildlife Conservation

PROFESSIONAL EXPERIENCE

- Assistant Professor, Department of Agricultural Sciences Education and Communication (75%) and Department of Curriculum and Instruction (25%), Purdue University, 2015-current
 - The Center for Advancing the Teaching and Learning of STEM (CATALYST), Affiliate.
- Assistant Professor (Non Tenure Track), Center for Youth Development, University of Minnesota, 2012-2015

AWARDS AND HONORS

- 2019 Teaching Leadership Award Fellow
- 2018 Scholarship of Engagement Fellows Program
- 2018 PK-12 Outreach and Engagement for Emerging Faculty Impact Award
- 2016 Purdue Cooperative Extension Specialists' Association (PUCESA) Leadership Scholarship Award
- 2015 REVERE award (Pre K-12 Learning), Category: Magazines – Feature Article, Association of American Publishers.

REFEREED PUBLICATIONS

1. Wang, H. H. (In-press). Examining patterners in teacher-student classroom conversation during STEM lessons. *Journal of STEM Education Research*.
2. Wang, H. H., Furrer, M., Orick, J., & Mitchell, K. (2019). Motivating master gardeners to teach STEM and agricultural concepts to youth. *North American Colleges and Teachers of Agriculture Journal*, 63, 225-230.
3. Scherer, H. H., McKim, A. J., Wang, H. H., DiBenedetto, C. A., & Robinson, K. (2019). Making sense of the buzz: Providing a taxonomy of “STEM” in agriculture, food, and natural resources education. *Journal of Agricultural Education*, 60(2), 28-53.
<https://doi.org/10.5032/jae.2019.02028>
4. Wang, H. H., & Knobloch, N. A. (2018). Levels of STEM integration through Agriculture, Food, and Natural Resources, *Journal of Agricultural Education*, 59(3), 258-277.
5. Wang, H.H., Bhattacharya, D., Evans, E., & Jirik P. (2017). Building bee houses: Designing and conducting solitary bee houses for scientific investigations, *Science Scope*, 41(3), 41-49.
6. Wang, H.H. & Billington B. (2016). Economically disadvantaged minority girls’ knowledge and perceptions of science and engineering and related careers. *The Journal of Extension*, 54 (6). <https://joe.org/joe/2016december/rb8.php>
7. Wang, H. H., & Nam, Y. (2015). Exploring the impact of a STEM integration teacher professional development program on secondary science and mathematics teachers’ perceptions of engineering and their attitude toward engineering integrated teaching. *Journal of Korean Earth Science Society*, 36(5), 484-499.
8. Wang, H. H., Billington, B., & Chen, Y. C. (2014). STEM in a hair accessory. *Science and Children*, 52(3), 54-59.
9. Chen, Y.C., Moore, T. J., & Wang, H. H. (2014). Construct, Critique, and Connect: Engineering as a vehicle to learn science. *Science Scope*, 38(3), 58-69
10. Guzey, S.S., Tank, K.M., Wang, H. H., Roehrig, G. H., & Moore, T. J. (2014). A high-quality professional development for teachers of grades 3-6 for implementing engineering into classrooms. *School Science and Mathematics*, 114(3), 139-149.
11. Roehrig, G. H, Moore, T. J., Wang, H. H., & Park, M. S. (2012). Is adding the E enough? Investigating the impact of K-12 engineering standards on the implementation of STEM integration, *Journal of School Science and Mathematics*, 112(1), 31-44.
12. Wang, H. H., Moore, T., Roehrig, G., & Park Mi-sun. (2011). STEM integration: Teacher perception and practice. *The Journal of Pre-College Engineering Education Research*, 1(2), 1-13.
13. Wang, H. H. & Carlson, S. (2011). Factors that influence student’s satisfaction in an environmental field day experience. *The International Electronic Journal of Environmental Education*, 1(2), 129-139.

14. Wang, H. H. (2010). *What do we know about science fair: research methods and human rights*. UN/UGO Association of World Citizens in Taiwan. Available at: http://www.worldcitizens.org.tw/awc2010/ch/F/F_d_page.php?pid=12979

BOOKS AND BOOK CHAPTERS

1. Rebello, C. M., Wang, H. H., Asunda, P. A., & Conner, A. (In-press). Infusing evidence-based reasoning in integrated STEM. In C. Johnson, M. Margaret, T. Moore, & L. English (Eds.) *Handbook of Research on STEM Education*. Purdue University Press, Indiana: West Lafayette.
2. Moore, T.J., Stohlmann, M.S., Wang, H. H., Tank, K.M., Glancy, A.W. & Roehrig, G.H. (2014). Implementation and integration of engineering in K-12 STEM education. In S. Purzer, J. Strobel, & M.E. Cardella (Ed.) *Engineering in pre-college settings: Synthesizing research, policy, and practices*. Purdue University Press, Indiana: West Lafayette.

INVITED PRESENTATION (N=4)

A. International:

1. *Lessons Learned from a STEM Integrated Program*, (2018, November). University of New England, Armidale, Australia, November, 2018. (13 attendees).
2. *STEM pollinator friendly program*. (2016, November). The International Forum on Elementary Science Education Reform in New Media Era, Nanjing, China. (65 attendees).

B. State and regional:

1. *Integrating STEM into informal educational programs*. (2017, Oct.). Invited keynote speaker for the Marshall County Extension Board. Plymouth, IN (45 attendees).
2. *Using a hydroponic curriculum to demonstrate different models of STEM integration*. (2016, October). North Central American Association Agricultural Education Conference, West Lafayette, IN. (18 attendees).

REFERRED RESEARCH PAPER

1. Wang, H. H., Bhattacharya, D., Nelson, B. (2019, Oct.). Secondary agriculture teachers' knowledge, beliefs, and teaching practices of climate change. Paper present at North Central Region American Association of Agricultural Education Conference (NC-AAAE), East Lansing, Michigan.
2. Scherer, H. H., McKim, A. J., Wang, H. H., DiBenedetto, C. (2019, June). Making sense of the buzz: A systematic review of "STEM" in AFNR education literature. Paper presented at the North American Colleges and Teachers of Agriculture conference, Twin Falls, ID.
3. Wang, H. H., Charoenmuang, M., Knobloch, N. A., & Tormoehlen, R. L. (2019, March). Defining interdisciplinary collaboration based on high school teachers' beliefs and

- practices of STEM integration using a complex designed system. Paper presented at the National Association for Research in Science Teaching (NARST), Baltimore, MD.
4. Wang, H. H., & Furrer, M. E. (2018, Nov.). A non-formal integrated STEM learning experience through native solitary bee for 4th to 6th grade students. Paper presented at the International STEM in Education Conference, Brisbane, Australia.
 5. Charoenmuang, M., Wang, H. H., Knobloch, N. A., & Tormoehlen, R. (2018, May). A land-grant model: Connecting university and high school teachers through STEM adventure. Paper presented at the North American Colleges and Teachers of Agriculture Conference, Ames, IA.
 6. Charoenmuang, M., Wang, H. H., & Knobloch, N. A. (2018, January). Teaching integrated STEM through agricultural context by using interdisciplinary approach. Paper presented at the Indiana STEM Education Conference, West Lafayette, IN.
 7. Wang, H.H., & Knobloch, N.A. (2017, October). *Developing a rubric for describing levels of integrated STEM*. Paper presented at the 2017 National STEM Education Research and Practice Summit, West Lafayette, IN.
 8. Wang, H. H., Furrer, M.E., Orick, J., & Mitchell, K. (2017, September). *Increasing Master Gardener volunteers' motivations and willingness to teach a STEM integrated agricultural youth program*. Paper presented at the North Central Region American Association of Agricultural Educators Conference (NC-AAAE), Ames, IA.
 9. Scherer, H.H., McKim, A.J., Wang, H.H., & DiBenedetto, C., Robinson, K. (2017, May). *Making sense of the buzz: Providing a taxonomy of "STEM" in Agriculture, Food, and Natural Resources Education*. Paper presented at 2017 the American Association of Agricultural Education Conference, San Luis Obispo, CA.
 10. Wang, H.H., & Knobloch, N.A. (2017, April). *Graduate students' knowledge and beliefs of teaching and learning STEM by integrating STEM through Agriculture, Food, and Nature Resource*. Paper presented at 2017 the National Association for Research in Science Teaching, San Antonio, TX.
 11. Karahan, E. & Wang, H. H. (2015). *Building a Rube Goldberg Machine: How youth use evidence-based argument to identify the best solution to a problem*. Paper presented at the international conference of the National Association for Research in Science Teaching (NARST), Chicago, IL.
 12. Wang, H. H, Chen, Y.C & Lin, J.L. (2014). *The relationship between written and oral arguments*. Paper presented at the international conference of the Association for Science Teacher Education (ASTE), San Antonio, TX, U.S.A.
 13. Wang, H. H., & Roehrig, G., & Moore, T. (2013). *STEM integration: Opportunities for using imagination and creativity to apply STEM knowledge in life science*. Paper presented at the international conference of the National Association for Research in Science Teaching (NARST), Rio Grande, Puerto Rico.
 14. Wang, H. H., & Billington, B. (2013). *Pedal Power: Design and implement a bike program for girls*. Paper presented at the international conference of the Association for Science Teacher Education (ASTE), Charleston, SC.

RESEARCH AND PROGRAM GRANTS

1. Forbes, C., Scherer, H., Wang, H. H., & Sintov, N. INFEWS RCN: Cultivating a national collaborative for research on food, energy, and water education, RCN, National Science Foundation, September 1st, 2019 to Aug. 31st, 2023. \$48,884
2. Wang, H. H., Knobloch, N. A., Tormoehoen, R. L., Langenhoven, P., & Feng, Y. WHIN with LOCAL STEM: Data-driven problem-solving using AFNR challenges, Wabash Heartland Innovation Network Funds, June 1st, 2019 to May 30th, 2021. \$50,409
3. Oliver, H., Worobo, R., Chaubey, I., Wiedmann, M., Deering, A., Ebner, P., Ricker, J., Wang, H. H., Stinson, B., Leighton S., Groth, G., Sykes, C., Sathguru, K. V., Burniske, G., & Kramer, J. M. Feed the future innovation lab for food safety (FSIL), United States Agency for International Development. Grant from USDIA. June, 2019 to May, 2024. \$ 9,989,774.
4. Forbes, C., Scherer, H., Wang, H. H., & Sintov, N. Innovating Teaching and Learning in the Nexus: Capacity-building for undergraduate food, energy, & water education. USDA NIFA Higher Education Challenge (HEC). Grant from USDA/NIFA. March 1st, 2018 to Feb. 28th, 2019. \$30,000.
5. Knobloch, N.A., Wang, H.H., Guzey, S.S., & Tormoehlen R.L. *Land-Grant Outreach for Community-Based Agricultural Learning for Science Technology, Engineering and Mathematics Education (LOCAL STEM)*. USDA NIFA Agriculture and Food Research Initiative, Educational Literacy Initiative's Professional Development for Secondary School Teachers and Educational Professionals (PD-STEP). Grant from USDA/NIFA. October 1st, 2016 to September 30th, 2019. \$144,150.
6. Wang, H. H., Orick, J., & Mitchell, K. *I Say Bee, You Say Science, Technology, Engineering and Mathematical (STEM): A Native Pollinator STEM Integrated Youth Program*. Agricultural Research and Extension Leading to Economic Development in Indiana Agriculture and Rural Communities (AgSEED). Grant from Purdue University College of Agriculture. March 1st, 2016 to September 30th 2017. \$50,000.
7. Wang, H. H., & Jirik P. *Save Native Pollinators, Secure Food Production, and Safeguard Our Environment: A Science, Technology, Engineering, and Mathematic (STEM) Integrated Youth Program*. Issue Area Grant. Grant from the University of Minnesota Extension. September 1st, 2014 to August 31, 2016. Funded, \$ 50,000.

REFERRED ABSTRACTS & POSTERS

1. *Nelson, B., Wang, H. H., & Tucker, M. (2019, May). Teachers perceptions and practices of inquiry-based teaching and learning using CASE curriculum. Poster presented at the American Association for Agricultural Education National Conference, Des Moines, Iowa.
2. Charoenmuang, M., Wang, H. H., & Knobloch, N. A. (2018, May). Developing a LOCAL STEM project for high school teachers and students. Poster presented at the American Association for Agricultural Education National Conference, Charleston, SC.
3. Furrer, M., Wang, H. H., Knobloch, N. A., & Pijanowski, B. (2018, June). An innovative approach to STEM integrated environmental education. Poster

4. Furrer, M.E., Wang, H. H., Orick, J., & Mitchell, K. (2017, September). *You say bee, I say STEM: A native-pollinator integrated program*. Presented at the North Central Region American Association of Agricultural Educators Conference (NC-AAAE), Ames, IA.
5. Forbes, C., Foster, D., Millenbah, K., Scherer, H.H., & Wang, H.H. (2017, June). *Education in the Food-Energy-Water-Nexus: A collaborative national network*. Presented at the North American Colleges and Teachers of Agriculture Conference (NACTA), West Lafayette, IN.
6. Knobloch, N. A., & Wang, H. H. (2016, June). *Teaching science, technology, engineering and mathematics through agriculture, food and natural resources*. Abstract presented at the annual conference of the North American Colleges and Teachers of Agriculture, Honolulu, HA *NACTA Journal*, 60 (Supplement 1).
7. Wang, H.H., Rebello, S.N., Langenhoven, P. & Orvis, K.S. (2016, April). *STEM integration: Using a hydroponic curriculum to engage STEM integration*. Poster presented at the P-12 Networking Summit & Poster Session, West Lafayette, IN.

TEACHING & COURSES

1. YDAE 540, *Program Development in Agriculture and Extension Education*. YDAE 540 is a graduate course in Agricultural and Extension Education that concentrates on the principles and practices of developing community-based educational program for youth and adults in non-formal education settings.
2. YDAE 591, *Teaching STEM Through Agriculture, Food and Natural Resources*. The goal of the course is to help students develop knowledge about STEM integration and equip them with teaching knowledge and skills for designing lesson plans by using agriculture, food and natural resources (AFNR). The unique component of this course is developing STEM and AFNR integrated lesson plans and teach them to local non-formal settings.
3. EDCI 558, *Methods of Integrated STEM Education*, EDCI 558 is a graduate course that focuses on operationalizing the theoretical pedagogical approaches to integrated Science, Technology, Engineering and Mathematics (STEM) education.

Course	Title	Cr	% of teaching	Semester	# of students/ # of student evaluation	University Criteria	
						Course	Instructor
ASEC 545/EDCI /546	Teaching STEM through AFNR	3	80	Spring 19	3/7	5	5
			51	Spring 18	3/3	4.8	5
			51	Spring 17	10/8	*3.8	* 4.2
			51	Spring 16	5/3	4.3	4.8
ASEC 540	Program Development	3	100	Fall 18	8/5	4.3	4.7

	in Agriculture and Extension Education			Fall 16	9/6	4.3	4.8
EDCI 558	Methods of Integrated STEM Education	3	50	Fall 18	11/7	4.0	4.6

(* denotes co-instructor's evaluation score due to the course deputy failed to set up individual course evaluation)

WORKSHOPS, PROFESSIONAL DEVELOPMENT PROGRAM, & SEMINARS

1. *LOCAL STEM Professional Development Program*. (2018, July). Westville, and Kankakee Valley high schools agriculture and STEM teachers, Pinney Purdue Agricultural Center, Wanatah, IN.
2. *LOCAL STEM Professional Development Program*. (2017, July). LaPorte, Westville, and South Central high schools agriculture and STEM teachers, Pinney Purdue Agricultural Center, Wanatah, IN.
3. *Design STEM Professional Development Program*. (2017, June). Highland middle/high school, Anderson, IN.
4. *Using a hydroponic curriculum to teach science by using STEM integrated approach*. Wang, H.H., & Rebello, S.N. (2016, January). Workshop presented at Indiana STEM Education Conference, West Lafayette, IN.
5. *High school students learning and applying science to real-world contexts using the food system*. Knobloch, N., & Wang, H.H. (2016, January). Workshop presented at Indiana STEM Education Conference, West Lafayette, IN.
6. *I Say Bee, You STEM: A Native Pollinator STEM Integrated Youth Program Professional Development*. Wang, H.H., Furrer, M., Orick, J., & Mitchell, K. (2016, Nov.). Master Gardener volunteers, Lafayette, IN.
7. *Design STEM Professional Development Program*. (2016, June.). Wang, H.H., Rebello, S.N., Ryu, M.J., Langenhoven, P. High school STEM and Agriculture teachers, West Lafayette, IN. (5 attendees).

CURRICULUM DEVELOPMENT

1. You Say Bee, I Say STEM. Wang, H.H., Furrer, M., Bhattacharya, D., Orick, J., Mitchell, K., Ayer, D., Appold, M., & Taylor K. (2018).
2. Wang, H.H., Cole, D., Haugen, M.D., & Lin, J.L. (2016). Engineering a Rube Goldberg! Curriculum Development. <http://www.extension.umn.edu/youth/mn4-H/events/engineering-design-challenge/ideas-resources/rg-curric/index.html>

OUTREACH & SERVICE ACTIVITIES

- Editing-Managing Board. *Journal of Agricultural Education*, 2019 - current
- Editorial Review Board. *Journal of Agricultural Education*, 2018-current
- Research Committee Chair. North Central American Association for Agricultural Education representative on the national AAAE research committee, 2019-2020.
- Research Committee Vice Chair. North Central Region American Association for Agricultural Education, 2017-2020.
- Research Committee. North Central American Association for Agricultural Education, 2016-2019.
- Reviewer. SAGA OPEN, 2016-current.
- Reviewer. School Science and Mathematics, 2013-current.
- Reviewer. International STEM Education, 2014-current.
- Member. NCDC231 - Collaborative for research on food, energy, and water education.

CURRENT PROFESSIONAL & ACADEMIC MEMBERSHIPS

- National Association for Research in Science Teaching (NARST), 2008-current
- National Science Teacher Association (NSTA), 2013-current
- Purdue University Cooperative Extension Specialists Association (PUCESA), 2015-current
- American Educational Research Association (AERA), 2016-current
- American Association for Agricultural Education (AAAE), 2016-current
- American Society for Engineering Education (ASEE), 2010-2012