

# Ian Her Many Horses



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## Education

University of Colorado Boulder, Ph.D. Curriculum & Instruction - Computer Science 2016  
University of Colorado Boulder, Computer Science, B.S. 2006

## Teaching Certification

Certification to teach Secondary Mathematics 2007  
University of Colorado Boulder

## Publications and Conference Proceedings

Sayler, B., Anderson, A., Caffee, H., Carroll, B., Hammel, K., Her Many Horses, I., Kertzman, D., Lange, P., Myers, R., Reiner, N., Uhre-Balk, N., & Webber, K. (2024). *Strengthening computational thinking within upper elementary classrooms: A strategy for broadening participation in computer science*. Proceedings of the 2024 on RESPECT Annual Conference (pp. 30–34). Association for Computing Machinery. <https://doi.org/10.1145/3653666.3656103>

McAlear, F., Her Many Horses, I., Casao, M., & Luebker, R. (2022). *Code Red: Culturally revitalizing computing courses in Native American-serving schools*. Proceedings of the 53rd ACM Technical Symposium on Computer Science Education V. 2 (pp. 1057–1058). Association for Computing Machinery. <https://doi.org/10.1145/3478432.3499232>

Nissen, J., Her Many Horses, I., Van Dusen, B., Jariwala, M., Close, E. (2021, April). *Tools for identifying courses that support development of expertlike physics attitudes*. Physical Review Physics Education Research. Doi: 10.1103/PhysRevPhysEducRes.17.013103

Nissen, J., Her Many Horses, I., & Van Dusen, B. (2021, March). *Investigating society's educational debts due to racism and sexism in student attitudes about physics using quantitative critical race theory*. Physical Review Physics Education Research. Doi: 10.1103/PhysRevPhysEducRes.17.010116

Her Many Horses, I. (October, 2017). *AgentDesign: A Tool to Scaffold Software Design for Elementary Students*. IEEE Symposium on Visual Languages and Human-Centric Computing. Raleigh, NC.

Nissen, J., De La Torre, A., Jariwala, M., Her Many Horses, I., & Van Dusen, B. (2017, June). *The LASSO Platform: Assisting Instructors in Learning About STEM Student Outcomes*. Foundations and Frontiers in Physics Education Research conference poster session 2017. Bar Harbor, ME

Otero, V., Langdon, L., Her Many Horses, I., Oatley, M., & Van Dusen, B. (2016). *Learning Assistant Alliance: Social Organizing Tools for Sharing Resources and Building Institutional Networks*. In Proc. 2016 Envisioning the Future of Undergraduate STEM Education Conference

Repenning, A., Webb, D.C., Koh, K., Nickerson, H., Miller, S.B., Brand, C., Her Many Horses, I., Basawapatna, A., Gluck, F., Grover, R., Gutierrez, K., Repenning, N. (2015). *Scalable Game Design: A Strategy to Bring Systemic Computer Science Education to Schools through Game Design and Simulation Creation*. ACM Transactions on Computing Education (TOCE). ACM Press.

Her Many Horses, I. (November, 2012). *Connections between Computational Thinking and Elementary Students' Everyday Interests and Gaming Practices*. 62nd Annual Conference of the Literacy Research Association. San Diego, CA.

Her Many Horses, I., Lee, M., & Otero, V. (April, 2011). *The Relationship Between School Context and Novice Teachers' Views of Students*. Paper presented at the Annual Meeting of the American Education Research Association. New Orleans, LA.

## **K-12 Teaching**

2008 - 2009, Todd County High School, Mission, South Dakota  
*High School geometry & computer science*

## **University Teaching and Curriculum Development**

2023 - 2024, University of Colorado Boulder, School of Education  
*Instructor for EDUC 2035: Designing STEM Learning Environments, a course that focuses on planning and teaching science and math concepts in a middle school setting.*

*Developer and Instructor for EDUC 4844/5855: Teaching & Learning - Computational Thinking, a course focused on learning about and incorporating computational thinking practices into learning environments.*

2021 - 2024, University of Colorado Boulder, School of Education  
*Instructor for EDUC 4060/5060: Classroom Interactions, a course for pre-service math teachers that develops teacher candidates' skills in teaching and learning secondary science and mathematics.*

*Instructor for EDUC 5375: Problem-Based Math Instruction, a course focused on development of unit lesson planning and teaching for pre-service math teachers.*

Spring 2024, University of Colorado Boulder, School of Education  
*Instructor for EDUC 2015: Elementary Math & Science Teaching for Social Justice, a course for pre-service elementary teachers that introduces topics on math and science pedagogical practices and theories.*

2021 - 2023, University of Colorado Boulder, School of Education

*Instructor for EDUC 2020: Step 1: Inquiry Approaches to Teaching STEM, a course that focuses on planning and teaching science and engineering concepts in an elementary setting.*

*Instructor for EDUC 2030: Step 2: Inquiry-Based Lesson Design, a course that focuses on planning and teaching science and math concepts in a middle school setting.*

Fall 2020, University of Colorado Boulder, School of Education

*Lesson Reviewer for EDUC 4060/5060: Classroom Interactions, a course for pre-service math teachers that develops teacher candidates' skills in teaching and learning secondary science and mathematics.*

2011 - 2015, University of Colorado Boulder, School of Education

*Instructor for EDUC 4610: Math and Science Education, an introduction to pedagogy course for new Learning Assistants in the Colorado Learning Assistant Program at the University of Colorado Boulder. Course topics include differentiation, conceptual development, metacognition, argumentation, learning theory, lesson planning, 5-E model, and motivation.*

## **Grants and Awards**

2023 - 2027: *Community Centered Pathways for Equity and Justice in STEM Teaching (Co-PI)*

Funder: National Science Foundation (Award # 2243353)                      \$1,198,468

2020 - 2024: *Leveraging Computational Thinking to Increase Computer Science within Elementary Classrooms (Co-PI)*

Funder: National Science Foundation (Award # 2031526)                      \$997,925

2014 - 2015: *Google Rise Award for Scalable Game Design NATIVE project (PI)*

Funder: GOOGLE: Google for Education    \$25,000

2012 - 2013: *Chancellor's Award for Excellence in STEM Education - Graduate Award (PI)*

Funder: Center for STEM Learning, CU Boulder                                      \$20,500

## **Presentations**

Grimshaw, M., Her Many Horses, I. (2024, December 19). *Harnessing AI Technology - Benefits for our Economy, Language and Beyond*. Sicangu Resource Development Professional's Development Conference. Rapid City, SD.

Lindquist, C., Guy, E., Keegan, T. T., Her Many Horses, I., Chandler, S. (2024, November 6). *Preserving Cultural Data and Language Sovereignty while also Benefiting from Emerging Technologies in the AI Era: Challenges and Opportunities*. Association for Computing Machinery DEI Council Indigenous Peoples' Heritage Awareness Month Panel. Held Virtually (<https://www.youtube.com/watch?v=BZlOkSNnYtA>).

Her Many Horses, I. (2024, July 13). *The Power of Computer Science for Kids*. Featured Speaker for the Sanford Underground Research Facilities' Neutrino Day Event. Lead, SD.

Running Wolf, C., Her Many Horses, I. (2024, June 4). *Lakota Code Camp*. One Country 2024 Rural Progress Summit. Held Virtually ([https://youtu.be/6jqkrLRLJuk?si=O0Tb\\_wLyQ\\_Hz8jLq](https://youtu.be/6jqkrLRLJuk?si=O0Tb_wLyQ_Hz8jLq)).

- Lindsay, W., & Her Many Horses, I. (2024, May 22). Preparing to teach for equity and justice: The CU Teach Equity Framework. Presentation at the UTeach STEM Educators Conference, May 21–23, 2024, Austin, TX.
- Her Many Horses, I. (2024, February 1-3). *Why Computer Science Should Matter to South Dakota Educators & Students*. Featured Speaker for the 2024 South Dakota STEM Education Conference, Huron, SD.
- Recvlohe, A., Delgado-Olson, A., Doctor, J., Running Wolf, C., Running Wolf, M., Her Many Horses, I. (2021, September 6-10). *Data Sovereignty for Native Communities*. CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference. Washington, DC.
- Delgado-Olson, A., Running Wolf, M., Running Wolf, C., Her Many Horses, I., Moses, C. (2021, December 7-10). *Data Sovereignty for Native Communities*. NeurIPS 2021.
- Her Many Horses, I. (2019, March). *AgentDesign: A Tool to Scaffold Software Design for Elementary Students*. AISES Convening on Computer Science Education for Native Students. Sulphur, OK.
- Her Many Horses, I. (2013, September). *Computer Science at an Elementary Level: Developing Computational Practices*. 5<sup>th</sup> Annual Symposium on STEM Education. Boulder, CO.
- Her Many Horses, I. & Otero, V. (2012, August). *When Former LAs Teach the LA Pedagogy Course: An insider's perspective*. Physics Education Research Conference. Philadelphia, PA.

## Research Experience

- 2015 - 2021, University of Colorado Boulder, School of Education  
*Postdoctoral position supporting data collection, research, and functional goals of the Learning Assistant Alliance.*
- 2009 - 2015, University of Colorado Boulder, Computer Science Department  
*Research assistant on the Scalable Game Design (iDREAMS/oDREAMS/CT4TC NSF projects) project. Assisted in the recruitment and professional development of teachers to implement computer science curriculum in K-12 classrooms and after school programs.*
- 2009 - 2011, University of Colorado Boulder, School of Education  
*Research assistant on the Learning Assistant Model for Teacher Education in Science and Technology (LATEST) research group. Collected and analyzed data for a longitudinal study of STEM novice teacher practices, retention, school context, and views of students.*

## Workshops & Professional Learning

- IndigiGenius Teach-the-Teacher Professional Development (July 7 – August 9, 2024). *Designed and implemented five-week professional development for educators from Indigenous communities to learn about the implementation of a culturally relevant and sustaining AI curriculum.* Activities held in-person on the South Dakota School of Mines & Technology campus in Rapid City, SD.
- IndigiGenius AI Code Camp (July 21 – August 9, 2024). *Designed and implemented a three-week camp for 18-20 year old Indigenous students from across North America.* Camp was held in-person on the South Dakota School of Mines & Technology campus in Rapid City, SD.

Lakota AI Code Camp (July 2022, June 2023, June 2024). *Designed and implemented three-week camp for Lakota high school students to learn about computer science, artificial intelligence and mobile app development.* Camps were held in-person on the Black Hills State University campus in Spearfish, SD.

ElemCT Summer Workshops (Summers of 2021, 2022, 2023). *Designed and implemented weeklong workshops to support 4<sup>th</sup> and 5<sup>th</sup> grade teachers in learning about, designing for, and implementing computational thinking practices.* Weeklong workshops held virtually and in person during summers of 2021, 2022, and 2023.

4Corners CS Conference (July 9-11, 2023). *Worked with planning team to create a conference for Indigenous educators to share and learn about computer science.* Conference held in-person at the Ft. Lewis College campus in Durango, CO.

TeachEngineering Summer Virtual Pd Workshops (Summer 2022, 2023). *Supported in-service teachers in leveraging NGSS and Computational Thinking practices within K-12 Engineering learning activities.* Workshop held virtually June 20-23 and August 1-4, 2022.

Her Many Horses, I., Shouldice, M. (July, 2014). *Teach 3D game design in one week.* Workshop at the International Society for Technology in Education 2014 National Conference. Atlanta, GA. June 28 - July 1, 2014.

Repenning, A., Her Many Horses, I. (June, 2013). *Teach 3D Game Design in One Week.* Workshop at the International Society for Technology in Education 2013 National Conference. San Antonio, TX. June 23 - 26, 2013.

## **Professional Experience**

2021 - present, University of Colorado Boulder, School of Education  
*Serve as a Co-Director for the CU Teach program, which supports STEM teachers seeking their teaching certificate and practicing teachers in schools.*

2019 - 2020, American Indian Science & Engineering Society  
*Served as a member of the curriculum development team for the Expanding Computer Science Opportunities for Native Girls (ECSNG) project, which is facilitated by the American Indian Science & Engineering Society and the Kapor Center*

2018 - 2023, Black Hills State University, Spearfish, SD  
*Served as the research advisor for the Expanding Pathways into Computer Science Across South Dakota project based out of Black Hills State University.*

2008 - 2009, University of Colorado Boulder  
*Coordinated program to recruit Native American high school students into STEM fields using model developed by the Alaska Native Science & Engineering Program (ANSEP).*

## **Professional Associations and Activities**

Computer Science Teachers Association (CSTA)

Natives in Tech (NiT)  
IndigiGenius, Co-Founder, Board Member  
American Indian Science & Engineering Society (AISES)