

JANICE K.S. MAK

Clinical Assistant Professor
Mary Lou Fulton Teachers College
Arizona State University
Tempe, Arizona 85287-0611
janice.mak@asu.edu
623-219-7416

Education

Texas Tech University

Ph.D., focusing on curriculum and instruction, STEM education, and policy. December 2019.

- *Dissertation Title:* Sixth Grade Students' Self-Regulated Learning and Motivation in a Technology-Enhanced Personalized Learning Environment: A Case Study
- *Advisor:* Dr. Jessica Gottlieb

George Mason University, Fairfax, Virginia

Master of Education in Curriculum and Instruction, focusing on issues of equity and global perspectives in science education. July 2003.

- *Thesis Project:* Equity in Science Education
- *Advisor:* Dr. Jack Levy

Rutgers University (Summa cum laude)

B.A. in Linguistics, minor in Russian. June 1995.

Professional Positions

Clinical Assistant Professor: Division of Educational Leadership and Innovation: Mary Lou Fulton Teachers College. Arizona State University, 2022-present.

Postdoctoral Research Scholar: Division of Educational Leadership and Innovation: Mary Lou Fulton Teachers College. Arizona State University, 2021-2022.

Teach undergraduate and graduate courses in the Mary Lou Fulton Teachers College on environmental education, computer science education and action research. Conduct research related to the accessible computational thinking in science education. Manage technology addendum for higher education partnership with Morocco pre-service teacher initiatives.

Science Curriculum Specialist: Curriculum and Instruction: Paradise Valley Unified School District, 2018-2021.

Lead district-wide implementation of K-12 science curriculum, instruction, professional learning, materials adoption, resources management, and assessment.

Assistant Principal: Whispering Wind Academy & Wildfire Elementary School: Paradise Valley Unified School District, 2016-2018

Co-lead two K-6 schools with implementation of strategic goals, data analysis, and professional learning communities, leading to school letter grade A-rating.

STEM & K-12 Gifted Teacher-on-Assignment: Paradise Valley Unified School District, 2014-2016.

Lead implementation of science, technology, computer science, and gifted initiatives.

Teacher-Innovator: Teacher Development Program: Paradise Valley Unified School District, 2012-2014.

Co-develop STEM and computer science initiatives and model gifted pedagogy in K-6 classrooms.

Achievement Advisor - Gifted Education: Glendale Elementary School District, 2011-2012.

Lead and manage curriculum, instruction, teacher professional development, community outreach, and assessment for the district's gifted program.

Teacher/Mentor: Discovery Elementary School: Glendale, Elementary School District, 2008-2011.

Teach 5th and 6th grade, mentor teachers (pre-service and in-service, lead professional development workshops, and create pacing guides as part of the district curriculum committee.

Middle School Lead Teacher: Anglo-American School of Moscow, 2005-2008.

Teach middle school humanities course, coordinate curriculum and instruction, implement for-credit professional development course through Seattle University

International Baccalaureate (IB) Teacher: Anglo-American School of Moscow, 2002-2005.

Design and implement units of inquiry for instruction within IB Primary Years Program.

Research

REFEREED JOURNAL PUBLICATIONS

1. **Mak, J.** (September 2021). The Struggle to be Seen and Feel Safe. *The State Education Standard*.
2. **Mak, J.** (March/April 2014). Coding in the Elementary Classroom. *Learning and Leading through Technology*.

PUBLISHED REFEREED PROCEEDINGS

1. **Mak, J.,** Rosato, J., Hosten, M. (in-press -2023, March). Data Science Landscape in Preservice Teacher Education. SIGCSE, Toronto, Canada.
2. **Mak, J.,** Israel, M., Ko., A., McGill, M., Friend, M. (in-press - 2023, April). Co-constructing

Systemic Support for Sustaining Humanizing and Inclusive Computer Science Teacher Education. AERA, Chicago, IL.

3. **Mak, J.**, Lin, Y., Su, M., Kramarczuk, K., Terrell-Shockley, E., Ketelhut, D.J., (in-press -2023, April). K-5 Accessible, Computational Thinking-Integrated Science Education: A Conceptual Framework. NARST, Chicago, IL.
4. Israel, M., Huang, R., **Mak, J.**, Bennett, A., Bexx, R.T. (2023, March). A Community of Practice for Elementary Teaching Promoting Inclusion of Students with Disabilities in CS Instruction. SIGCSE, Toronto, Canada
5. Xin, Y., Kramarczuk, K., **Mak, J.**, Terrell-Shockley, E., Ketelhut, D.J. (2023, March). Computational Thinking-Integrated Elementary Science with Culturally Responsive Teaching: A Vignette Study. SIGCSE, Toronto, Canada.
6. **Mak, J.**, Figueroa, F., Kramarczuk, K., Xin, Y., Terrell-Shockley, E., Ketelhut, D.J., Nelson, B. (2022, May). Case Study: A Participatory Approach to Building a Consensus-Module of Computational Thinking Infused, Culturally Responsive Science Instruction. RESPECT 2022, Philadelphia, PA.
7. Figueroa, F., **Mak, J.**, Kramarczuk, K., Xin, Y., Terrell-Shockley, E., Ketelhut, D.J., Nelson, B. (2022, May). CT for Every Student? Implications for an Equity-Focused PD Experience for Elementary Science Teachers. RESPECT 2022, Philadelphia, PA.
8. Bernier, J., Cabrera, L., Figueroa, F., Ha, J., Kramarczuk, K., **Mak, J.**, Su, M., Xin, Y., Yan, L., Ketelhut, D.J., Nelson, B., Terrell-Shockley, E. (2022, June). Accessible Computational Thinking in Elementary Science. ISLS Annual Meeting 2022, Hiroshima, Japan.
9. Twarek, B., **Mak, J.**, Glass, S., Barashango, S. C., & Chang, C. (2022, March). Developing an Ecosystem of Support for K-12 CS Educators. In *Proceedings of the 53rd ACM Technical Symposium on Computer Science Education V. 2* (pp. 1162-1162).
10. Twarek, B.T., Seehorn, D., **Mak, J.**, O'Grady-Cuniff, D., Ray, M., Sedgwick, V., & Friend, M. (2021, March). *Developing Effective and Equitable K-12 Computer Science Teachers*. Session presented at 52nd ACM Technical Symposium on Computer Science Education (SIGCSE). *Online format*.
11. Mensing, K., **Mak, J.**, Bird, M., & Billings, J. (2013, October). *Computational, model thinking and computer coding for U.S. Common Core Standards with 6 to 12 year old students*. Session presented at International Conference on Emerging eLearning Technologies and Applications (ICETA), Stara Lesna, Slovakia.

BOOK/REPORT CONTRIBUTION

1. Code.org, CSTA, & ECEP Alliance. (2022). 2022 State of computer science education. Retrieved from <https://advocacy.code.org/stateofcs> [Co-author]
2. Code.org, CSTA, & ECEP Alliance. (2021). 2021 State of computer science education: Accelerating action through advocacy. Retrieved from <https://advocacy.code.org/stateofcs> [Co-author]
3. **Mak, J.** (2016). Global STEM Learners. In J. Lindsay (Author) *The Global Educator*.

REFEREED CONFERENCE PRESENTATIONS AND WORKSHOPS

1. Twarek, B.T., **Mak, J.**, Glass, S., Barashango, S.C., & Chang, C. (2022, March). *Developing an Ecosystem of Support for K-12 CS Educators*. Poster presented at the 53rd ACM Technical Symposium on Computer Science Education (SIGCSE). *Online format*.
2. Kramarczuk, K., Cabrera, L., Jass Ketelhut, D., Terrell-Shockley, E., Xin, Y., **Mak, J.**, Nelson, B., Bernier,

J., Ha, J., Su, M., Yan, L., & Figueroa, F. (2022 January). A Professional Development Model for Integrating Computational Thinking and Culturally Responsive Teaching Practices into Elementary Science Practice. Poster presented at ASTE Annual Conference 2022, Greenville, SC.

3. **Mak, J.**, Glass, S., Barashango, S.C., & Chang, C. (2021, July). *Computer Science Coaching Toolkit*. Session presented at the Computer Science Teachers Association conference. *Online format*.
4. Twarek, B.T., Seehorn, D., **Mak, J.**, O'Grady-Cuniff, D., Ray, M., Sedgwick, V., & Friend, M. (2021, March). *Developing Effective and Equitable K-12 Computer Science Teachers*. Session presented at 52nd ACM Technical Symposium on Computer Science Education (SIGCSE). *Online format*.
5. Sleasman, S., **Mak, J.**, Nelson, B., Breen, M., Castelhana, J., & Knight, M. (2019, July). *Arizona Computer Science: from Standards to Implementation*. Presentation given at the Computer Science Teachers Association conference, Phoenix, AZ.

INVITED PAPERS AND TALKS

1. **Mak, J.** (2023, February). Invited panelist, Infosys Foundation Crossroads, Tempe, AZ
2. **Mak, J.** (2022, September). Invited keynote, Arizona Postdoctoral Researcher Annual Conference, Tucson, AZ.
3. **Mak, J.** (2022, May). *Rethink, Reimagine, Realize*. Invited keynote, Dakhla International Conference, Morocco.
4. **Mak, J.** (2022, January). Connecting Education to Learning. Invited panelist, Smart Region Summit: Arizona State University, Tempe, AZ.
5. **Mak, J.** (2021, June). *Computational Thinking and Computer Science: From Standards to Practice*. Invited presenter at International Conference on Computational Thinking + STEM Education, National Institute of Education, Nanyang Technological University, Singapore.
6. **Mak, J.** (2021). *Data Science Leaky Pipeline, Women in Data Science*. Invited panelist, Women in Data Science, University of Arizona, Tucson, Arizona.
7. Culatta, R., **Mak, J.** & Rosenworcel, J. (2020). *Equity and Digital Learning*. Invited panelist, National Association for State Boards of Education annual conference.
8. **Mak, J.** (2020). *Arizona Education - State of the State*. Invited panelist, Rio Salado 2020 Conference.
9. **Mak, J.** (2020). *Computer Science - State of the State*. Invited Keynote, Center for Digital Education AZ CIO/CTO Conference.
10. **Mak, J.** (2019). *Computer Science Teacher Certification - Microcredential Pathways?*. Invited panelist, Code.org/Computer Science Teachers Association State Policy Forum.
11. **Mak, J.** (2019). *Enabling Effective Implementation of Competency-based STEM Curriculum in Turkey*. Invited consultant, International Bureau of Education (IBE)-UNESCO, Istanbul, Turkey.

12. **Mak, J.** (2018). *Science-Centered Language Development*. Presenter, PVUSD.
13. **Mak, J.** (2018). *Three-dimensional Science - from Vision to Implementation*. Presenter, PVUSD.
14. **Mak, J.** (2018). *Innovations in the New Science Standards*. Presenter, PVUSD.
15. **Mak, J.** (2017). *Computer Science for Arizona*. Presenter, CIO/CTO Forum.
16. **Mak, J.** (2017). *Three Powerful Words can Unlock Computer Science Success*. Author, ISTE.
17. **Mak, J.** (2016). *Math - Focus on the Implications of the Shifts*. Invited talk, Student Achievement Partners.
18. **Mak, J.** (2016). *Celebrate Hour of code with these Activities and Resources*. Author, ISTE.
19. **Mak, J.** (2016). *Your Students can Create Virtual Reality Expeditions*. Author, ISTE.
20. **Mak, J.** (2016). *Google Expeditions Offers Stunning Field Trips without Leaving Schools*. Author, ISTE.
21. **Mak, J.** (2015). *Math - Teachers' Talk - Implementation*. Invited talk, Achieve National Convening.
22. **Mak, J.** (2015). *Computer Science Fundamentals*. Presenter, Google Apps for Education AZ Summit. Presenter.
23. **Mak, J.** (2015). *STEM in the Middle*. Author, Desert Ridge Lifestyles.
24. **Mak, J.** (2015). *Google CSFirst Ignites Interest in Computer Science*. Author, ISTE.
25. **Mak, J.** (2015). *Global Science Inquiry's Benefits for Students*. Author, eschool news.
26. **Mak, J.** (2014). *Computer Science Across the Curriculum*. Invited talk, Science Foundation Arizona STEM Conference.
27. **Mak, J.** (2014). *The Framework for K-12 Science Education*. Invited talk, AZ Science Teachers Association/Arizona Department of Education.
28. **Mak, J.** (2014). *Creative Coding*. Presenter, Google Apps for Education AZ Summit.
29. **Mak, J.** (2014). *Creativity, Coding and Computational Thinking*. Presenter, AZ Gifted Education Conference.
30. **Mak, J.** (2013). *Robotics and Engineering for Girls*. Presenter, ASU Fulton Schools of Engineering - K-12 Outreach.

EXTRAMURAL RESEARCH AND GRANT FUNDING

Google. Four Corners Computer Science (CS) Convening. 2023. \$400,000. Collaborative grant with the Computer Science Teachers Association and AZ, CO, NM, and UT State Departments of Education to advance Indigenous CS efforts in the Four Corners region.

Burton Family Foundation. Data Science Summit. 2023. \$36, 478. Collaborative grant with the Arizona Department of Education for statewide data science summit.

National Science Foundation (NSF). Accessible Computational Thinking (ACT) in Elementary Science Classes within and across Culturally and Linguistically Diverse Contexts. \$931,000. Researcher and Consultant. ACT investigates best practices for providing experiences for all elementary children to participate in and engage with computational thinking (CT) integrated into science instruction. Specifically, we explore how elementary science teachers develop the skills and dispositions to provide access to CT for culturally and linguistically diverse learners by incorporating Culturally Responsive Teaching (CRT) practices.

USAID. Higher Education Partnership-Morocco. \$1,000,000. Technology Addendum Manager. Coordinate with members of Moroccan Ministry of Education government, higher education institutions, USAID and others to help establish formal educational and research partnership with Morocco.

National Science Foundation. Travel scholarship to attend CISE Education and Workforce PI meeting. May 2022.

Arizona Community Foundation. Computer Science Teachers Association - Arizona Chapter Development. 2022. \$25,000. Coordinate with CSTA-Arizona to expand and strengthen presence and stability of the Arizona chapter through establishing regional presence, community engagement, and professional learning.

Burton Family Foundation. Data Sciences Academy. 2022. \$50,000. Grant to support funding for summer teacher professional learning in data science.

InfoSys. Computer Science Professional Learning. 2022. \$150,000. Coordinate with CSTA - Arizona to plan, implement, and evaluate summer professional learning for K-12 computer science teachers.

Thomas R. Brown Foundation. Data Sciences Academy. 2022. \$7,500. Grant to support funding for academic year teacher professional learning in data science.

Arizona Community Foundation. Computer Science Teachers Association - Arizona Chapter Development. 2019. \$25,000. Coordinate with CSTA-Arizona to expand and strengthen presence and stability of the Arizona chapter through establishing regional presence, community engagement, and professional learning.

Google. Integrating Bootstrap units into middle and high school algebra classes using GSuite. 2018-2019. PI: Jeff Billings. Senior personnel: Janice Mak. Creation of PD to integrate the Bootstrap CS/Math curriculum into middle and high school courses in Paradise Valley Schools, Arizona.

FUNDED RESEARCH ADVISORY BOARDS

National Science Foundation (NSF): Rural AZ Hubs Advancing Computer Science (AZ-HACS). 2020-2022. Advisory Board Member. This grant focuses on assessing levels of preparedness and implementation of AZ Computer Science Standards in rural AZ K-8 schools.

University of Arizona: *Data Sciences Academy*. 2021-present. Advisory Board Member.

U.S. Department of Education (USDOE): *CSforEL, CSTA*. 2020-2024. Collaborator. Four-year research project to attract, retain, and engage English learners in AP Computer Science Principles in Arizona, New Mexico, San Diego County, and Orange County.

Teaching and Mentoring

HIGHER EDUCATION COURSES TAUGHT

(MLFTC: Teachers College.)

Graduate Level:

- MLFTC: Master's Ed. Leadership - Capstone

Undergraduate Level:

- MLFTC: SCN 302 (ASU) – Environmental Education

Service

(MLFTC: Teachers College.)

UNIVERSITY

- 2022: Invited collaborator for School for Future and Innovation. Reviewed citizen science curriculum for SciStarter on Data Literacy.

COLLEGE/SCHOOL

- 2022: MLFTC - Post-doctoral Research Scholar, Search and Interview Committee
- 2020-2021: Paradise Valley Unified School District: Chair, Assessment Committee
- 2018-2021: Paradise Valley Unified School District: Chair, Health Education Committee
- 2016-2018: Paradise Valley Unified School District: Co-chair, Data Review Committee
- 2014-2016: Paradise Valley Unified School District: Co-chair, Professional Development Committee
- 2012-2014: Paradise Valley Unified School District: Technology Committee
- 2002-2005: Anglo-American School of Moscow: Curriculum and Assessment Committees

EDITORIAL BOARDS AND REVIEWER SERVICE

- 2018 – 2022t: International Society for Technology in Education (ISTE), Empowered Learner.

- 2021 – present: National Science Foundation, Panelist.
- 2020 – 2021: United States Department of Education Rural Tech Grant, Reviewer Panelist.
- 2018 – 2019: Computer Science Teachers Association, National Conference Proposals Reviewer.

PROFESSIONAL ORGANIZATION MEMBERSHIPS

- Computer Science Teachers Association: elected member, board of directors
- CS for AZ: co-founder and co-director
- Computer Science Teachers Association - Arizona: President
- Arizona Science Teachers Association
- Arizona Association Teachers Association
- International Society for Technology in Education
- National Council of Teachers of Mathematics
- National Science Teaching Association

PROFESSIONAL ORGANIZATION SERVICE

- 2022: WestEd/Kapor Center, San Francisco, CA. Invited Reviewer.
- 2021 – present: Computer Science Teachers Association, Board of Directors.
- 2021-present: University of Arizona, K-14 Design Committee.
- 2021 – 2022: National Association of State Boards of Education, Equity Committee.
- 2020 – 2022: Computer Science Teachers Association, Chicago, IL. Writing team for computer science coaching toolkit.
- 2019 – 2021: Computer Science Teachers Association, Chicago, IL. Writing team for Standards for K-12 Computer Science Teachers.
- 2019 – 2021: International Society for Technology in Education, Fairfax, VA. Development team for Computational Thinking Microcredentials.
- 2019 – 2020: International Society for Technology in Education, Fairfax, VA. Writing team for Computational Thinking Competencies.
- 2016 – 2021: Arizona State Board of Education, Appointed Member.
- 2016 – 2021: Arizona K12 Center, Board of Directors.
- 2019 – present: National Science Teaching Association, Technology Advisory Board.
- 2018 – present: International Society for Technology in Education (ISTE), Empowered Learner Advisory Council.
- 2018 –2021: Arizona Department of Education: State Science Leaders
- 2018 – 2020: Computer Science Teachers Association: President, Arizona Chapter.
- 2018 – 2019: Computer Science Teachers Association, Conference Committee.
- 2017-2020: National Center for Women in Information Technology, Executive Council.
- 2016-2018: Computer Science Teachers Association: Secretary, Arizona Chapter.
- 2015 – present: Code.org, Affiliate Trainer.
- 2016 – 2017: Illustrative Mathematics/Open Up Resources, Instructional Materials Reviewer.
- 2014 – 2017: Achieve, Instructional Materials Reviewer.
- 2014 – 2016: Arizona Science Teachers Association, Developing Science Leaders Ambassador.
- 2014 – 2016: Association for Supervision and Curriculum Development (ASCD) Arizona Chapter, Board Member.

- 2009 – 2017: Arizona Department of Education, Master Educator.

HONORS AND AWARDS

- 2022: Community for Advancing Discovery Research in Education (CADRE) Fellow, NSF.
- 2021: National Institutes of Health - Data Science Fellow
- 2021: Making IT Happen Award, International Society for Technology in Education (ISTE).
- 2018: Advocacy Award, ISTE.
- 2017: Computer Science Spotlight, NSF.
- 2016: PBS Learning Media Digital Innovator, PBS.
- 2015: K-12 I.T. Must-Read Blog, EdTech
- 2015: Educator Award, National Center for Women in Information Technology (NCWIT).
- 2015: Semi-finalist Arizona Teacher of the Year, Arizona Education Foundation.
- 2014: Presidential Award for Excellence in Mathematics and Science Teaching, NSF/White House.

