ERDOGAN KAYA

EDUCATION

Ph.D. ***Teaching and Learning: Science Education*** University of Nevada, Las Vegas
Area of Specialization: Curriculum and Instruction K-12 STEM+CS Education.
Title: *Toward Developing a Valid and Reliable Assessment of Learners' Nature of Engineering Views.* Summer, 2020
M.S. ***Computer Science*** Spring 2013
B.S. ***Chemical Engineering*** Spring 2007

PROFESSIONAL EXPERIENCE

2020 - Present **Assistant Professor of Education**
George Mason University
College of Education and Human Development
Division of Elementary, Literacy and Secondary Education
2015 – 2020 **Graduate Research Assistant,** University of Nevada, Las Vegas
2019 – Summer **Instructor,** the Robotics Academy of Nevada
2019 – Summer **Instructor,** Absolute Academy Summer Gifted Camp
2017 – 2018 **Instructor,** UWSP Youth in College Summer STEM Program
2016 – 2017 **STEM+CS Instructor,** UNLV UPWARD BOUND
2015 – 2020 **STEM+CS Instructor,** UNLV Saturday STEM School

Teaching Licensure & Credentials

- Nevada State **Secondary Teaching Certification,** Computer Science Endorsement, Advanced Computer Science Endorsement
- Arizona State **Secondary Teaching Certification,** 7-12 STEM, Engineering
- Arizona State **Highly Qualified,** Elementary & Middle School Math

HONORS & AWARDS

2021 - NARST Jhumki Basu Scholar Award - Faculty
2020 - NARST Jhumki Basu Scholar Award – Graduate Student
2020 – UNLV Graduate College Medallion Recipient
2020 - Barrick Graduate Fellowship
2020 - Graduate and Professional Student Association Research Forum Outstanding Presentation Award 1st place.
2018 - UNLV College of Education Outstanding Graduate Student Teaching Award -First Place.
2018 - UNLV Outstanding Graduate Student Teaching Award – Second Place
2018 - UNLV Office of Community Engagement Student Service Award – Honorable Mention
2017 - Graduate and Professional Student Association Research Forum Outstanding Presentation Award 2nd place.
2016 - Graduate and Professional Student Association Merit Award Recipient
2014 - NCWIT Aspirations in Computing Teacher Award (National Recognition by National Center for Women & Information Technology)
2010 - U.S Provisional Patent for Invention in Circular Brackets

Publications

Peer-Reviewed Journal Articles

E-Empirical; P-Practitioner * Denotes publications with students

Kaya, E., Deniz, H., Yesilyurt, E. (in press). Engineers Solve Big Trash Problem; Can't Pick It Up? 3D Print and Assemble a Grabber to Aid Litter Collection Services. *Science & Children.* **P**

Yesilyurt, E., Deniz, H. & **Kaya, E**., (2021). Exploring Sources of Engineering Teaching Self-efficacy for Pre-service Elementary Teachers. *International Journal of STEM Education*, 8, 42. https://doi.org/10.1186/s40594-021-00299-8 **E**

Deniz, H., Yesilyurt, E., & **Kaya, E**., (2021). Teaching Nature of Engineering with Picture Books. *Science & Children*, 56(8), 80–86. **P**

Deniz, H., **Kaya, E**., Yesilyurt, E., Newley, A., & Lin, E. (2021). Integrating Engineering, Science, Reading, and Robotics across Grades 3-8 in a STEM Education Era. Journal of Learning and Teaching in Digital Age, 6(1), 40-45. **E**

Kaya, E., Newley, A., Yesilyurt, E., & Deniz, H. (2020). Measuring Computational Thinking Teaching Efficacy Beliefs of Preservice Elementary Teachers. *Journal of College Science Teaching*, 49(6). **E**

Deniz, H., **Kaya, E.,** Yesilyurt, E., & Trabia, M. (2020). The influence of an authentic engineering design experience on elementary teachers' nature of engineering views. *International Journal of Technology and Design Education, 30,* 635-656. https://doi.org/10.1007/s10798-019-09518-4

Kaya, E., Yesilyurt, E., Newley, A. & Deniz, H. (2019). Examining the Impact of a Computational Thinking Intervention on Pre-service Elementary Science Teachers' Computational Thinking Teaching Efficacy Beliefs, Interest and Confidence. *Journal of Computers in Mathematics and Science Teaching*, *38*(4), 385-392. Waynesville, NC USA: Association for the Advancement of Computing in Education (AACE). Retrieved December 31, 2019 from https://www.learntechlib.org/primary/p/210970/. **E**

Kaya, E., Newley, A., Yesilyurt, E., & Deniz, H. (2019). Improving Preservice Elementary Teachers' Engineering Teaching Efficacy Beliefs With 3D Design and Printing. *Journal of College Science Teaching*, 48(5), 76–83. **E**

Newley, A., **Kaya, E**., Deniz, H., & Yesilyurt, E. (2019). Animatronic Lions, and Tigers, and Bears, Oh My! How computational thinking and 3D printing can help students create an animatronic zoo. *Science & Children*, 56(8), 64–71. **P**

Newley, A., **Kaya, E**., Deniz, H., & Yesilyurt, E. (2018). Celebrity Statues: Learning Computational Thinking by Designing Biomimetic Robots. *Science Scope*, 42(1), 74. **P**

Deniz, H., **Kaya, E**., Yesilyurt, E. (2018). The Soda Can Crusher Challenge: Exposing Elementary Students to Engineering Design Process. *Science & Children*. **P**

Kaya, E., Newley, A., Deniz, H., Yesilyurt, E., & Newley, P. (2017). Introducing Engineering Design to a Science Teaching Methods Course Through Educational Robotics and Exploring Changes in Views of Preservice Elementary Teachers. *Journal of College Science Teaching*, 47(2), 66-75. **E**

Newley, A., Deniz, H., **Kaya, E.,** & Yesilyurt, E. (2016). Engaging Elementary and Middle School Students in Robotics through Hummingbird Kit with Snap! Visual Programming Language. *Journal of Learning and Teaching In Digital Age (JOLTIDA)*, 1(2), 20-26. Retrieved from http://joltida.org/index.php/joltida/article/view/20 **E**

Kaya, E., Deniz, H., Newley, A., Yesilyurt, E., & Khalilov, F. (2016). Preparing Ugandan Secondary Teachers for Robotics and Technology Competitions. *Journal of Learning and Teaching in Digital Age (JOLTIDA)*, 1(1), 12-17. Retrieved from http://www.joltida.org/index.php/joltida/article/view/7 **E**

Muzafarova, T. & **Kaya, E. (**2015) Survey of Awareness of Massive Open Online Courses (MOOC) – a Case of International Black Sea University Students. *Journal of Education*

in Black Sea Region. Retrieved from http://journal.ibsu.edu.ge/index.php/sje/article/view/634/530 **E**

Manuscripts under Review

Kaya, E., Deniz., H, Yesilyurt, E. (under review). Toward Developing A Valid and Reliable Assessment of Learners' Nature of Engineering Views. **E**

Bahar., **Kaya, E.,** K., Zhang, X (under review). Trends in Gender Disparities in Computer Science: An Analysis of the Advanced Placement Computer Science Exam. **E***

Yesilyurt, E., Deniz, H., **Kaya, E.** (under review). Development and Validation of the Engineering Teaching Efficacy Beliefs Instrument. **E**

Yesilyurt, E., Deniz, H. & **Kaya, E**. (under review). Epistemic Aspects of Engineering for K-12 Education. **E**

Developing Manuscripts to be submitted to Refereed Journals

Bahar., **Kaya, E.,** K., Zhang, X (in preparation). Trends in Racial Disparities in Advanced Placement Computer Science Exams. **E***

Kaya, E., Yesilyurt, E., Deniz., H (in preparation). Assessing Engineering Educators' and Professional Engineers' Nature of Engineering Views. **E**

Kaya, E., Yesilyurt, E., Deniz., H (in preparation). Assessing Teachers' Nature of Engineering Views. **E**

Kaya, E., Zhang, X., Newley, A., Deniz, H., & Yesilyurt., E (in preparation). Examining the Impact of a Computational Thinking Intervention on Pre-service and In-service Teachers' Computational Thinking Teaching Efficacy Beliefs, Interest, Knowledge and Confidence. **E***

Yesilyurt, E., Deniz, H. & **Kaya, E**. (in preparation). Philosophy of Engineering for K-12 Engineering Education. **E**

Deniz, H., **Kaya, E.,** & Yesilyurt, E (in preparation). Epistemological Aspects of Engineering and the Next Generation Science Standards. **E**

Deniz, H., Yesilyurt, E., **Kaya, E**. & Trabia, M. (in preparation). The Influence of an Authentic Engineering Design Experience on Elementary Teachers' Engineering Teaching Efficacy Beliefs. **E**

Deniz, H., Orgill, M., Carroll, K., **Kaya, E**., & Yesilyurt, E. (in preparation). Concept mapping changes in elementary teachers' content knowledge about energy**. E**

Yesilyurt, E., Deniz, H., **Kaya, E.** (in preparation) Exploring Upper Elementary Students' Nature of Engineering Views with Authentic Engineering Design Challenge. **E**

Refereed Proceedings

Hutchison, A., **Kaya, E.,** Regan, K., Miller, B., Jakeway, E., Dai, G., Gross, M., & Stephens, M. (2022, April). Using the Compose and Code Digital Platform to Provide Leveled Support for Students with Disabilities as They Learn Coding and Computational Thinking. *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 869-875). Online: Association for the Advancement of Computing in Education (AACE). Retrieved April 23, 2022 from https://academicexperts.org/conf/site/2022/papers/59649/. (To Appear)

Kaya, E., Newley, A., Yesilyurt, E. & Deniz. H. (2021). Nature of Computer Science: Identification of K-12 Accessible Nature of Computer Science Tenets and Development of an Open-Ended Nature of Computer Science Instrument. *In Proceedings of the 17th ACM*

Conference on International Computing Education Research (ICER 2021). Association for Computing Machinery, New York, NY, USA, 426. DOI:https://doi.org/10.1145/3446871.3469784

Deniz, H., Yesilyurt, E., **Kaya, E**., Newley, A. & Lin, E. (2020). Integrating Engineering, Science, Reading, and Robotics across Grades 3-8 in a STEM Education Era. In D. Schmidt-Crawford (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 869-875). Online: Association for the Advancement of Computing in Education (AACE). Retrieved April 21, 2020 from https://www.learntechlib.org/primary/p/215840/.

Vazquez, A., & Marti, E. J., & **Kaya, E**., & Deniz, H. (2019, June), *Cross-Cultural Training and Engineering: An Illustration Using Vietnamese Engineering Faculties' Responses to Nature of Engineering Instrument (Work in Progress)* Paper presented at 2019 ASEE Annual Conference & Exposition , Tampa, Florida. 10.18260/1-2—32571

Marti, E., **Kaya, E.,** Deniz, H**.**, Yesilyurt, E., & Iglesias, J. (2018). *Assessing High School Science Teachers' Nature of Engineering (NOE) Perceptions with an Open-ended NOE Instrument.* The paper is published in *Conference Proceedings of American Society for Engineering Education Conference 2018.*

Marti, E., Deniz, H**., Kaya, E**. & Yesilyurt, E. (2017). *High School Science Teachers' Views of Nature of Engineering and Applications of Engineering Design Practices.* The paper is published in *Conference Proceedings of American Society for Engineering Education Conference 2017.*

Newley, A., **Kaya, E**., Deniz, H**.** & Yesilyurt, E. (2017). *Measuring Engineering Perceptions of Fifth-grade Minority Students with the Draw-an-Engineer-Test (DAET).* The paper is published in *Conference Proceedings of American Society for Engineering Education Conference 2017.*

Ozis, F., & Newley, A. D., & **Kaya, E.** (2016, June), *First Round Evaluation of First Tech Challenge (FTC) Robotics Club: Does it Really Prepare Students for beyond College?* The paper is published in *Conference Proceedings of American Society for Engineering Education Conference 2016.*

Muzafarova, T. & **Kaya, E.** (2015, April). Educating Leaders in Flipped Classrooms. Paper presented at the Fifth International Research Conference on Education. Tbilisi, Georgia. The paper is published in *Conference Proceedings of International Research Conference on Education.*

Presentations

Kaya, E., Yesilyurt, E., & Deniz, H. (2022, March). Assessing Learners' Nature of Engineering Views. Paper presented at 2022 American Educational Research Association (AERA) Annual Meeting. San Diego, CA, USA. (To Appear)

Kaya, E., Yesilyurt, E., & Deniz, H. (2022, March). Meaningful Assessment of Engineering Experts' and Teachers' Conceptions of Nature of Engineering. Poster presented at 2022 National Association for Research in Science Teaching (NARST) Annual International Conference., Vancouver, BC, CANADA.

Bahar, A., **Kaya, E.,** & Zhang, X. (2022, March). Analysis of Gender Disparities in Advanced Placement Computer Science: Trends in Participation. Poster presented at 2022 American Educational Research Association (AERA) Annual Meeting. San Diego, CA, USA. (To Appear)*

Deniz, H., **Kaya, E.,** & Yesilyurt, E., (2022, March). Searching for Nature of Engineering in the Framework for K-12 Science Education. Poster presented at 2022 National Association

for Research in Science Teaching (NARST) Annual International Conference., Vancouver, BC, CANADA.

Yesilyurt, E., Deniz, H., & **Kaya, E**. Philosophy of Engineering for K-12 Engineering Education. Paper presented at 2022 American Educational Research Association (AERA) Annual Meeting. San Diego, CA, USA. (To Appear)

Hutchison, A., Evmenova, A., **Kaya, E.,** Offutt, J., Regan, K., Gutierrez, K., Colwell, J. (2022, May). Introduction of the Compose and Code Platform for Scaffolding Computational Thinking and Coding for Students with High-Incidence Disabilities. Poster presented at 2022 Research in Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT) Conference. (To Appear)

Yesilyurt, E., Deniz, H. & **Kaya, E**. (2021, April). Epistemic Aspects of Engineering for K-12 Education. Paper presented at 2021 National Association for Research in Science Teaching (NARST) Annual International Conference.

Deniz, H., Yesilyurt, E., **Kaya, E**. (2020, April). The Influence of an Engineering Design Experience with Robotics on K-12 Teachers' Nature of Engineering Views. Paper presented at 2020 National Association for Research in Science Teaching (NARST) Annual International Conference, Portland, OR, USA.

Yesilyurt, E., Deniz, H. & **Kaya, E**. (2020, Apr 17 - 21) *Sources of Self-Efficacy in an Engineering Professional Development Program for In-Service Teachers* [Paper Session]. AERA Annual Meeting San Francisco, CA http://tinyurl.com/tht6tw8

Deniz, H., Yesilyurt, E. & **Kaya, E.** (2020, Apr 17 - 21) *Toward Defining Nature of Engineering in the Next Generation Science Standards Era* [Poster Session]. AERA Annual Meeting San Francisco, CA http://tinyurl.com/whny5tb

Vazquez, A., Marti, E., **Kaya, E.,** Deniz, H. (2019, June). Exploring Vietnamese Engineering Faculties' Nature of Engineering Views. American Society for Engineering Education. Tampa, FL, USA.

Kaya, E., Yesilyurt, E., & Deniz, H. (2019, April). Assessing the Impact of a Computational Thinking Intervention on K-12 Science Teachers' Robotics Teaching Efficacy Beliefs, Interest and Knowledge in Educational Robotics. Paper presented at 2019 National Association for Research in Science Teaching (NARST) Annual International Conference. Baltimore, MD, USA.

Yesilyurt, E., Deniz, H., **Kaya, E.** (2019, April). Sources of Engineering Teaching Self-Efficacy for Pre-service Elementary Teachers. Paper presented at 2019 National Association for Research in Science Teaching (NARST) Annual International Conference. Baltimore, MD, USA.

Yesilyurt, E., Deniz, H., **Kaya, E.** (2019, April). Development and Validation of the Engineering Teaching Efficacy Beliefs Instrument. Poster presented at 2019 National Association for Research in Science Teaching (NARST) Annual International Conference. Baltimore, MD, USA.

Kaya, E., Deniz, H., Yesilyurt, E., & Newley, A. (2019, March). Examining the Impact of a Computational Thinking Intervention on Pre-service Elementary Science Teachers' Computational Thinking Teaching Efficacy Beliefs, Interest and Confidence. Paper presented at 30th annual conference of the Society for Information Technology and Teacher Education. Las Vegas, NV, USA.

Yesilyurt, E., Deniz, H., **Kaya, E.** (2019, January) Exploring Upper Elementary Students' Nature of Engineering Views with Authentic Engineering Design Challenge. Paper Presented at the 2019 Association for Science Teacher Education Conference. Savannah, GE, USA.

Deniz, H., Orgill, M., Carroll, K., **Kaya, E.,** Yesilyurt, E., (2019, January). Concept Mapping Changes in Elementary Teachers' Content Knowledge about Energy. Paper Presented at the 2019 Association for Science Teacher Education Conference. Savannah, GE, USA

Marti, E. J., **Kaya, E**., Deniz, H., Yesilyurt, E., Iglesias, J. (2018, June), *Assessing High School Science Teachers' Nature of Engineering (NOE) Perceptions with an Open-ended NOE Instrument (Fundamental)* Paper presented at 2018 ASEE Annual Conference & Exposition , Salt Lake City, Utah. https://peer.asee.org/29821

Kaya, E., & Yesilyurt, E., & Newley, A. D., & Deniz, H. (2018, June), *Investigating Computational Thinking Self-Efficacy Beliefs of Pre-Service Elementary Teachers.* Poster presented at 2018 ASEE Annual Conference & Exposition, Salt Lake City, Utah. https://peer.asee.org/30721

Newley, A., & **Kaya, E.,** & Deniz, H., & Yesilyurt, E. (2018, June), *Teaching K-8 Students Engineering Design Process through Zoombinis.* Poster presented at 2018 ASEE Annual Conference & Exposition, Salt Lake City, Utah. https://peer.asee.org/31055

Deniz, H., **Kaya, E.** Yesilyurt, E., (2018, April). The Differential Impact of Two Engineering Professional Development Programs on Elementary Teachers' Engineering Teaching Efficacy Beliefs. Poster presented at 2018 National Association for Research in Science Teaching (NARST) Annual International Conference. Atlanta, Georgia.

Kaya, E., Yesilyurt, E., & Deniz, H. (2018, January). Examining the Impact of a Relatively Short Intervention on Science Teachers' Robotics Teaching Efficacy Beliefs and Interest in Educational Robotics. Paper Presented at the 2018 Association for Science Teacher Education Conference. Baltimore, MD, USA.

Kaya, E., & Newley, A. D., & Deniz, H., & Yesilyurt, E. (2017, June), Board # 115 : EEGRC Poster: Improving Pre-service Elementary Teachers' Nature of Engineering Views with the Use of EV3 Robotics. Poster presented at 2017 ASEE Annual Conference & Exposition, Columbus, Ohio. https://peer.asee.org/27698

Marti, E. J., & Deniz, H., & **Kaya, E.,** & Yesilyurt, E. (2017, June), *Board # 98 : High School Science Teachers' Views of Nature of Engineering and Application of Engineering Design Practices (Work In Progress)* Paper presented at 2017 ASEE Annual Conference & Exposition, Columbus, Ohio. https://peer.asee.org/27967

Newley, A. D., & **Kaya, E.,** & Yesilyurt, E., & Deniz, H. (2017, June), *Board # 104 :Measuring Engineering Perceptions of Fifth-grade Minority Students with the Draw-an-Engineer-Test (DAET) (Work In Progress)* Paper presented at 2017 ASEE Annual Conference & Exposition, Columbus, Ohio. https://peer.asee.org/27675

Yesilyurt, E., Turgut, R., **Kaya, E**., Deniz, H. (2017, April). General Education Preservice Teachers' Attitudes, and Beliefs/Knowledge regarding Second Language Acquisition and English Language Learners. Poster presented at 2017 American Educational Research Association (AERA) Annual Meeting. USA.

Deniz, H., Yesilyurt, E., **Kaya, E**. (2017, April). The Influence of an Authentic Engineering Design Experience on Elementary Teachers' Engineering Teaching Efficacy Beliefs. Poster presented at 2017 National Association for Research in Science Teaching (NARST) Annual International Conference, San Antonio, Texas.

Deniz, H., Yesilyurt, E., **Kaya, E.,** Trabia, M. (2017, April). The Influence of an Authentic Engineering Design Experience on Elementary Teachers' Nature of Engineering Views. Paper presented at 2017 National Association for Research in Science Teaching (NARST) Annual International Conference, San Antonio, Texas.

Kaya, E., Newley, A., Yesilyurt, E., & Deniz, H. (2017, April). Improving Pre-service Elementary Teachers' Engineering Teaching Efficacy Beliefs through 3D Printing (Work

in Progress). Poster presented at the 2017 American Society for Engineering Education Pacific Southwest (ASEE PSW) Section. Tempe, AZ, USA.

Ozis, F., & Newley, A. D., & **Kaya, E.** (2016, June), *First Round Evaluation of First Tech Challenge (FTC) Robotics Club: Does it Really Prepare Students for beyond College?* Paper presented at 2016 ASEE Annual Conference & Exposition, New Orleans, Louisiana. 10.18260/p.26905

Muzafarova, T.& **Kaya, E.** (2015, April). Educating Leaders in Flipped Classrooms. Paper presented at the Fifth International Research Conference on Education. Tbilisi, Georgia.

Lightning Talks

Kaya, E., Newley, A., Yesilyurt, E., & Deniz, H. (2021). Lightning Talk. Nature of Computer Science: Identification of K-12 Accessible Nature of Computer Science Tenets and Development of an Open-Ended Nature of Computer Science Instrument. In Proceedings of the 17th ACM Conference on International Computing Education Research ICER 2021), August 16-19, 2021, Virtual Event, USA. ACM, New York, NY, USA, Pages. https://doi.org/10.1145/3446871.3469784

Book Chapters

Deniz H., Yesilyurt E., Newman S.J., **Kaya E**. (2020) Toward Defining Nature of Engineering in the Next Generation Science Standards Era. In: Akerson V.L., Buck G.A. (eds) Critical Questions in STEM Education. Contemporary Trends and Issues in Science Education, vol 51. Springer, Cham. https://doi.org/10.1007/978-3-030-57646-2_3

Workshops and Community Presentations

Yesilyurt, E., Deniz, H., & **Kaya, E.,** (2021, December). *Features of Engineering for K–12 Education.* Workshop conducted at the National Science Teachers Association (NSTA) Area Conference on Science Education. Los Angeles Convention Center. Los Angeles, CA. National Association for Research in Science Teaching (NARST) Sponsored Session.

Deniz, H., Yesilyurt, E. & **Kaya, E.,** (2019, November). *Integrating Engineering and Computational Thinking with 3D-Printed Engineering Design.* 2019 SSMA Convention. Salt Lake City, UT, USA.

Deniz, H., Yesilyurt, E. & **Kaya, E.,** (2019, March). *Integrating 3D Printing with Mechanical Trash Grabber Design Challenge within the Context of the Next Generation Science Standards.* 30th annual conference of the Society for Information Technology and Teacher Education. Las Vegas, NV, USA.

Deniz, H., **Kaya, E.,** & Yesilyurt, E. (2018, October). *Integrating Engineering Design with Science and Language Arts within the Context of NGSS.* Workshop conducted at the National Science Teachers Association (NSTA) Regional Convention, Reno, NV. Association for Science Teacher Education (ASTE) sponsored session.

Deniz, H., **Kaya, E**, & Yesilyurt, E. (2018, January). *Integrating Engineering Design within the Context of the Next Generation Science Standards.* A preconference workshop held at the annual meeting of the Association for Science Teacher Education (ASTE), Baltimore, MD.

Newley, A & **Kaya, E** (2017, April). *Snap! Programming with the Hummingbird Robot*. 2017 American Society for Engineering Education Pacific Southwest (ASEE PSW) Section. Tempe, AZ, USA.

Kaya, E. & Newley, A. (Accepted). *Snap! Programming with Hummingbird Robot.* National Science Teachers Association (NSTA) 2016 Conference.

Newley, A & **Kaya, E** (2016, July). *Snap! Programming with the Finch Robot*. CSTA Annual Conference, San Diego, CA.

EVALUATIONS & REPORTS

Hutchison, A., **Kaya,** E. & Peters-Burton, E. (2021). Report to Amazon on the success of the GMU Amazon Teacher Externship Experience.

GRANT PROPOSALS

2016 - UNLV Teaching and Learning Grant for Graduate Student Participation in Professional Conferences (2016-2019), $350/yr, total $1,400

2016 - UNLV GPSA Grant for Graduate Student Participation in Professional Conferences (2015-2019), $500/yr, total $2,000

Funded Projects

Grant Title: CSForAll
Institute: National Science Foundation (NSF)
RFA Topic: Collaborative Research: Developing an Integrated Computer Science Curriculum for Linguistically and Culturally Diverse Classrooms at Grades 3-5 (#2122083) (Collaborative Research - PI) (2021- 2024)
Requested Amount: Total $999,454 (**Funded**)

Grant Title: CSforAll
Institute: National Science Foundation (NSF)
RFA Topic: A Partnership to Implement the Inclusive Computer Science Model of Professional Development & DEPICT-CS to Provide PK-6 Computer Science Instruction for Students with Disabilities (#2122807) (Co-PI) (2021 - 2024)
Requested Amount: $999,985 (**Funded**)

Grant Title: Mason Teacher Externship
Institute: Google.com, Inc.
RFA Topic: Mason Professional Development (Co-PI) (2022 - 2023)
Requested Amount: $250,000 (**Funded**)

Grant Title: Amazon Future Engineer: Teacher Externship
Institute: Amazon.com, Inc.
RFA Topic: The Amazon-Mason Professional Development Experience a partnership between Amazon Future Engineer and the College of Education and Human Development at George Mason University (Co-PI) (2020 - 2022)
Requested Amount: $310,000 (**Funded**)

Grant Title: UNLV Scholarship of Teaching and Learning Grant (2017)
Institute: Office of the Executive Vice President and Provost
RFA Topic: Introducing Engineering to Elementary Pre-service Teachers through 3D Printing and Educational Robotics

Received Amount: $2738

Grant Title: Center for Math, Science, and Engineering Education (2016)
Institute: UNLV
RFA Topic: Introducing Engineering to Elementary Pre-service Teachers through Educational Robotics
Received Amount: $2000

Grant Title: LOWE'S Toolbox for Education (2013)
Institute: Lowe's
RFA Topic: STEM Workshop
Received Amount: $4980

Grant Title: AzTEA Technology in Education Grant (2014)
Institute: AzTEA and CenturyLink
RFA Topic: Finch and Hummingbird Robotics
Received Amount: $5000

Grant Title: IEEE Foundation Grant (2013)
Institute: IEEE Foundation
RFA Topic: FTC Robotics in SSA
Received Amount: $5,000

Grant Title: Rookie FTC Team Grant (2013)
Institute: Alcoa Foundation
Received Amount: $1000

Grant Title: Classroom Technology Support Grant (2009)
Institute: Donors choose (Raised for several projects)
Received Amount: $6000

Grant Title: Wells Fargo Education Grant (2010)
Institute: Wells Fargo
Received Amount: $500

Grant Title: Classroom Technology Support Grant (2009)
Institute: Wells Fargo
Received Amount: $500

Projects Under Review

Grant Title: Computer Science for All
Institute: National Science Foundation (NSF)
RFA Topic: AI is Elementary: Integrating Artificial Intelligence with Science, Mathematics, and Language Arts Instruction at Linguistically Diverse Upper Elementary Classrooms (Co-PI)
Requested Amount: ~$1,000,000 (Under Review)

Grant Title: Discovery Research PreK-12

Institute: National Science Foundation (NSF)
RFA Topic: Computer Science Teaching Observation Protocol (CS-TOP) (Co-PI)
Requested Amount: ~$3,000,000 (Under Review)

Developing Projects to be submitted to Funding Agencies

Grant Title: ITEST
Institute: National Science Foundation (NSF)
RFA Topic: Advancing Artificial Intelligence (AI) Literacy through Linguistically Inclusive Integrated Elementary Engineering Curriculum via Educational Robotics (Collaborative Project - PI)
Requested Amount: ~$1,500,000

Unfunded Projects

Grant Title: ITEST
Institute: National Science Foundation (NSF)
RFA Topic: Creativity Enhancing and Culturally Relevant Engineering Activities (CREST) for Black Youth (Co-PI)
Requested Amount: ~$1,500,000 (Unfunded)

Grant Title: Google CS-ER (2021)
Institute: Google Inc.
RFA Topic: Advancing Computational Thinking via CS for All (Co-PI)
Requested Amount: ~$120,000 (Unfunded)

Grant Title: TryEngineering Together (Spring, 2019)
Institute: TryEngineering Together
RFA Topic: Effects of mentorship in an engineering program through robotics
Requested Amount: $20,000 (Unfunded)

Grant Title: UNLV Scholarship of Teaching and Learning Grant (Fall, 2019)
Institute: Office of the Executive Vice President and Provost
RFA Topic: Towards a Meaningful Assessment of Learners' Understanding About Nature of Engineering - Nature of Engineering Instrument (NOEI)
Requested Amount: $2938 (Unfunded)

Grant Title: UNLV Assessment Mini Grant (Spring, 2018)
Institute: Office of the Executive Vice President and Provost
RFA Topic: Performance Assessment: Measuring Pre-Service Elementary Teacher's Computational Thinking knowledge by using Educational Robotics
Requested Amount: $3200 (Unfunded)

Grant Title: Robotics Program Start up Grant (2013)
Institute: Honda Foundation
Requested Amount: $80,000 (Unfunded)

TEACHING EXPERIENCE

College Teaching

2021 – Summer **Instructor – Project-Based Learning in Computer Science (PBL in CS)**
Responsibilities include developing the course syllabi and teaching the PBL in CS courses with an emphasis on equity and diversity. Developed the courses and assignments for students to engage in PBL. Evaluated students' written assignments and performance. This course is designed to familiarize secondary STEM and CS teachers with the PBL. Course participants examine a variety of computing concepts and tools (e.g. Artificial Intelligence, Machine Learning, Cybersecurity, Physical Computing), and a variety of other resources to support the teaching of pre-college stand-alone CS courses and/or CS integrated STEM instruction. Throughout the course, students are introduced to freely available resources and/or other online interfaces to explore and model issues around computing.

2020 – Present **Instructor – Teaching (Advanced) Computer Science in the Secondary School**
Responsibilities include developing the course syllabi and teaching the Methods I and II courses with an emphasis on equity and diversity. Developed and revised the courses and assignments for BAM and Master's students to engage in computer science content, Virginia Computer Science Standards of Learning, and pedagogical content knowledge (PCK). Evaluated students' written assignments and performance.

2015 – 2020 **Instructor – Elementary Science Teaching Methods**
Responsibilities include developing the course syllabi and teaching the elementary science teaching methods course through inquiry with emphasis on nature of science (NOS), engineering, and computational thinking. Revised and developed the course and assignments for undergraduate elementary education majors and Teach for America graduate students to engage in science content, NGSS standards, and pedagogical content knowledge (PCK). Evaluated students' written work and performance.

2015 – 2016 **Graduate Teaching Assistant- Curriculum Development in K-8 Science**
This course emphasizes (1) research and curriculum studies dealing with content and procedures of elementary/secondary school science programs; (2) introduces problems of conducting systematic inquiry in the curriculum field related to secondary science, including generation of practical programs, curriculum research and theory, innovative proposals, and critical analysis; (3) focuses on current status of field, literature sources, and work of leading scholars. Responsibilities included assisting setting up materials before the class, grading exams, students' semester science projects, and reporting the final grades to the coordinator of the course.

2016 – 2017 **Graduate Teaching Assistant- Applications of Technology in K-12 School Science**
Research-based study of the integration of technology into the teaching of science in grades K-12. Students who successfully complete this course will have a greater appreciation for technology's role in the K-12 science classroom. Students will develop an understanding for and commitment to appropriately integrating technology within their instructional practice. Responsibilities included co-teaching (e.g. Computational Thinking, Engineering, 3D printing) assisting setting up materials before the class, grading exams, students' semester science projects, and reporting the final grades to the coordinator of the course.

2017 – Summer **Graduate Teaching Assistant- Engineering Design & Solar Thermal Water Heating**
This is an independent study course for current CCSD teachers. Main topics include the engineering design process (as it applies to the Next Generation Science Standards) and solar thermal water heating and water treatment systems. The goal is to provide teachers with the

necessary tools and first-hand experience in using the engineering design process so that they can incorporate engineering practices in their classroom. Responsibilities included co-teaching and guiding students' engineering projects, and assisting the coordinator of the course.

2019 – Summer **Instructor – The Robotics Academy of Nevada**

The Robotics Academy of Nevada – a statewide professional development program funded by Tesla's K-12 Education Investment Fund, facilitated by DRI's PreK-12 STEM education and outreach program, Science Alive, in partnership with the Colleges of Engineering at UNLV and UNR. Responsibilities include teaching K-12 Computer Science standards to participating teachers.

2016 – 2017 **Tutor - UNLV Asian American and Native American Pacific Islander Serving Institutions (AANAPISI) Program**

This program provides assistance to Asian American and Native American Pacific Islander-students to improve and expand student retention, graduation, language access, and mentoring. My responsibility is to plan, develop, undertake, and carry out activities to support students in undergraduate level courses and mentor them about graduate school. I assist students to develop a deeper understanding of course content, create effective study strategies, review lecture notes, prepare for quizzes, tests, or exams. In addition, I assess the tutee's progress throughout tutoring sessions.

K-12 Teaching

2019 – Summer **Instructor – Absolute Academy Summer Gifted Camp**

Absolute Academy is a non-profit educational organization which offers academic enrichment programs in Northern Virginia to foster mathematical and computational thinking skills of students. Absolute Academy uses the A-Star Program, which is a comprehensive curriculum designed towards national and international competitions in Math and Computer Science, such as MathCounts, AMC 8/10/12, USA(J)MO, and USA Computing Olympiad (USACO). Responsibilities include teaching engineering and computer science to camp students and prepare them for the USACO.

2017 – 2018 **Instructor - UWSP Youth in College Summer STEM Program**

University of Wisconsin Stevens Point Youth in College (YIC) is a summer enrichment experience for high achieving academic ability students in grades K-9. Youth in College STEM is a summer program designed for students who are currently in grades 6-9 and are functioning above their grade level placement. Typical students who attend challenging, fast-paced Youth in College programs are two grade levels above other students their age academically or intellectually. YIC STEM is hosted by the Network for Gifted Education, University of Wisconsin-Stevens Point. Responsibilities include teaching STEM and computer science to YIC students.

2016 – 2017 **STEM+CS Instructor - UNLV UPWARD BOUND**

UNLV Upward Bound Math and Science Academy is a federally funded college-preparatory program that serves high school students who are either low-income and/or potential first-generation college students. Upward Bound's mission at UNLV is to assist students with graduating high school, entering college, and earning a baccalaureate degree. Responsibilities included teaching STEM and Computer Science to Upward Bound students.

2015 – Present **STEM Instructor – UNLV Saturday STEM School**

Responsibilities include advertising Saturday STEM School through traditional and technological means, developing an overarching theme for Saturday STEM courses and teaching engineering and robotics for students.

2008 - 2014 **Teacher of Computer Science**

Evaluated and developed curriculum and lesson plans for all computer science subjects. Interviewed, hired, observed, evaluated, and mentored K-12 computer science teachers. Improved the computer science laboratory equipment and facilities in all district schools. Created and gathered resources to establish new STEM+CS course offerings at the elementary/middle/high school levels. Courses Taught: Digital Arts, Web Authoring, Introduction to Programming, AP Computer Science (Java), Introduction to Engineering 101, IGCSE Information Technologies and Communication, AS & A Level ICT. Supervised and coached FIRST Robotics programs.

2008 - 2010 **Teacher of Math & Science**

Courses Taught: Algebra, Physical Science, Life Science

FELLOWSHIPS & SCHOLARSHIPS

- Nominated for the President's UNLV Foundation Graduate Research Fellowship (2019)
- UNLV Summer Doctoral Research Fellowship (2018, 2019, 2020)
- John Vergiels Scholarship (2018, 2019)
- University of Nevada, Las Vegas Teaching Assistantship (2015- Present)
- Southwest Travel Award (2018)
- GPSA Book Scholarship (2017)
- Patricia Sastaunik Scholarship (2017-2018-2019)
- UNLV Department of Teaching and Learning Scholarship (2017)
- UNLV Access Grant (2016-2017-2018-2019)
- Edward Pierson Scholarship (2017)
- University of Nevada, Las Vegas NSF Research Assistantship (2016-2017)
- Eskisehir Trade and Business Foundation Scholarship (2002-2007)
- Anadolu University Rector Scholarship (2002-2007)

SERVICE LEADERSHIP

- NARST Equity and Ethics Committee Member (2021 – Present)
- The Annual Conference on Research in Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT) Technical Program Committee Member
- Code.org Volunteer
- Computer Science Teachers Association (CSTA) Equity Fellowship Reviewer
- Computer Science Teachers Association (CSTA) Teaching Excellence Awards Reviewer
- ASEE 2018 Computers in Education Division Session Moderator
- FIRST Robotics Competition Judge
- FIRST First Tech Challenge Judge
- National Center for Women & Information Technology Collegiate Award Selection Committee Member
- Civil Air Patrol (CAP) Senior Member
- APS & FCPS Career Exploration Fair Volunteer
- Association for the Advancement of Artificial Intelligence (AAAI) Symposium on Educational Advances in Artificial Intelligence (EAAI-22 Special track on Demos, Software Tools, and Activities for Teaching AI in K-12) Reviewer

EDITORIAL ACTIVITIES

- Association for Computing Machinery (ACM) Special Interest Group on Computer Science Education (SIGCSE) Annual Conference Reviewer
- American Society of Engineering Education (ASEE) Annual Conference Reviewer
- ASEE Collaborative Network for Engineering and Computing Diversity (CONECD) Annual Conference Reviewer
- National Association for Research in Science Teaching (NARST) Conference Reviewer
- IEEE Transactions on Education Journal Reviewer
- ASEE Student Division Best Paper Award Reviewer
- Computer Science Teachers Association (CSTA) Annual Conference Reviewer
- Society for Information Technology & Teacher Education (SITE) Reviewer
- National Science Teachers Association (NSTA) Science Scope Journal Reviewer
- Journal of Pre-College Engineering Education Research (J-PEER) Reviewer

PROFESSIONAL MEMBERSHIPS

- American Educational Research Association (AERA)
- Association for Computing Machinery (ACM) Special Interest Group on Computer Science Education (SIGCSE)
- National Science Teachers Association (NSTA)
- American Society of Engineering Education (ASEE)
- National Association for Research in Science Teaching (NARST)
- The Association for Science Teacher Education (ASTE)
- Society for Information Technology & Teacher Education (SITE)
- Computer Science Teachers Association (CSTA)

Affiliations

GMU Institute for Digital Innovation
GMU Quantum Science and Engineering Center
GMU Center for Social Equity Through Science Education

Media (Features and Mentions)

https://cehd.gmu.edu/news/stories/computer-science-teacher-externship

https://cehd.gmu.edu/news/stories/improving-perceptions

https://www2.gmu.edu/news/2021-01/mason-partnering-amazon-provide-computer-science-education-teachers

https://news.montgomeryschoolsmd.org/staff-bulletin/amazon-offering-computer-science-education-externships-to-teachers/

https://cehd.gmu.edu/news/stories/twenty-area-teachers-chosen-for-amazon-externship

https://mdchamber.org/18709-2/

https://www.eurekalert.org/news-releases/926912
https://mdchamber.org/maryland-chamber-foundation-teams-up-with-amazon-and-george-mason-university/

https://www.eurekalert.org/news-releases/928298

PROFESSIONAL SKILLS

Computer Skills*:* *Python (Scikit-learn, TensorFlow, Numpy, Pandas, Matplotlib, Scipy, Seaborn), Jupyter Notebook, SQL (Intermediate),* SPSS (Advanced), AMOS(Advanced), R(Intermediate), Mplus(Intermediate), Lisrel(Intermediate), Pajek(Intermediate), MS Office Suite (Expert), C# (Intermediate), JAVA (Advanced), MATLAB (Advanced), AutoCAD (Intermediate), HTML, CSS, JavaScript (Intermediate), Photoshop (Intermediate), Flash(Intermediate), Tableau (Advanced), Unity, SalesForce SFDEX-402V2-SG Declarative Development For Platform App Builders, SAS Viya

Certifications:

- Introduction to Big Data by University of California San Diego on Coursera. Certificate earned at Saturday, September 7, 2019 8:59 PM GMT
- Desert Research Institute – NASA Cybersecurity Bootcamp. Certificate earned in January 2020.
- Data Analysis with Python by IBM on Coursera. Certificate earned in October 18, 2019
- Machine Learning with Python by IBM on Coursera. Certificate earned in January 03, 2020
- What is Data Science by IBM on Coursera. Certificate earned in October 6, 2019
- Population Education Workshop Provider
- Beauty and Joy of Computing - Working Connections IT Faculty Development Institute earned in December 18, 2019.
- CompTIA IT Fundamentals (ITF+) - CompTIA – earned in February 2020
- 2016 - University of Nevada, Las Vegas Graduate College Mentorship Certificate
- 2016 - University of Nevada, Las Vegas Graduate College Communication Certificate
- 2016 - University of Nevada, Las Vegas Graduate College Teaching Certificate (In-progress)
- 2016 - University of Nevada, Las Vegas Graduate College Research Certificate