


Drew Gossen, PhD

Assistant Professor of Science Education
University of South Alabama
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Education/Certification

Ph.D. Education with Option in Science Education – May 2021
Completion of 18 graduate hours in physics
Oklahoma State University, Stillwater, OK

M.Ed. Educational Administration – May 2016
Southwestern Oklahoma State University, Weatherford, OK,

B.S. Secondary Education: Physics – May 2006
Oklahoma State University, Stillwater, OK

Teacher Certifications – Oklahoma – Physics, Chemistry, Biological Sciences, Mathematics

Professional Experience

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| 2021-Present | Assistant Professor of Science Education
Department of Leadership and Teacher Education
University of South Alabama, Mobile, AL
<i>Courses Taught:</i> Teaching Science (for undergraduate K-6 Education and graduate Alternative Master programs), K-6 Education, Special Topics in Science Education, Internship in Elementary Education, Curriculum and Planning in the Elementary School, Field Experience |
| 2017-2021 | Graduate Teaching and Research Assistant
School of Teaching, Learning, and Educational Sciences
Oklahoma State University, Stillwater, OK
<i>Courses Taught:</i> Science in the Elementary Curriculum, Knowing and Learning in Mathematics and Science |
| 2011-2017 | Science and Mathematics Teacher
Piedmont High School, Piedmont, OK
<i>Courses Taught:</i> AP Physics 1, AP Physics 2, AP Physics C, Pre-AP Physics, Meteorology, Forensic Science, Human Anatomy and Physiology, Zoology, 8 th Grade Mathematics, 7 th Grade Mathematics |

2006-2011

Science Teacher

Stillwater Junior High School, Stillwater, OK

Courses Taught: Physical Science, Earth and Space Science

Publications

- Ivey, T., **Gossen, D.**, & Utley, J. (in press). Rural readiness: Influencing elementary students' perceptions of and interest in engineering. *School Science and Mathematics*.
<https://doi.org/10.1111/ssm.18380>
- Giles, Rebecca M., **Gossen, D.**, Moore, A., & Morrison, K. (in press). American children's perceptions of nature: An analysis of their drawings. *International Journal for Cross-Disciplinary Subjects in Education*, 16(1).
- Gossen, D.** (2024). It says STEM so it must work for everyone: Experiences, beliefs, and career choices across the STEM disciplines. *International Journal of Education in Mathematics, Science, and Technology*, 12(3), 660-681. <https://doi.org/10.46328/ijemst.3450>
- Tucker, C.B., Byrd, K.O., **Gossen, D.**, & Morrison, K. (2024). Teacher self-efficacy and preparedness for integrating STEM education using a project-based learning approach. *Journal of Research in Science, Mathematics and Technology Education*, 7(SI), 43-59.
<https://doi.org/10.31756/jrsmte.313SI>
- Wu, S., Burleson, A., Islam, S., **Gossen, D.**, & Oyelere, A. (2024). Exploring engineering students' perceptions of diversity and inclusion in a southern public university: A case study. *Trends in Higher Education*, 3(1), 67-104. <https://doi.org/10.3390/higheredu3010005>
- Gossen, D.** & Ivey, T. (2023). The impact of in- and out-of-school learning experiences in the development of students' STEM self-efficacies and career intentions. *Journal for STEM Education Research*. <https://doi.org/10.1007/s41979-023-00090-0>
- Gossen, D.**, Hammack, R., & Utley, J. (2022). Impact of a summer camp on elementary students' understanding and awareness of engineering careers and attitudes toward engineering. *Electronic Journal for Research in Science and Mathematics Education*, 25(4), 23-41.
<https://ejrsme.icrsme.com/article/view/20800>
- Eck, C. J., Whisenhunt, J., Robinson, J. S., Neumann, K.L., Utley, J., & **Gossen, D.** (2021). How pre-service agricultural education teachers plan to integrate STEM competencies in their lessons. *North American Colleges and Teachers of Agriculture Journal*, 65(1), 242-253.
<https://bit.ly/3JYelb4>
- Utley, J., **Gossen, D.**, & Ivey, T. (2019). Influencing elementary students' perceptions about the work of an engineer. *Proceedings of the 2019 American Society for Engineering Education*, Midwest Section, Wichita, KS. <https://peer.asee.org/33928>

Grants

External Funding

Funded

National Science Foundation, Scholarships for Students in STEM Program (S-STEM)

PI: Eric Steward, University of South Alabama

\$4,999,979, **Pending**, 2026-2031, Role: Co-PI

STEM STARS – A Partnership to Build Persistence to Math-Intensive Degrees in Low-Income Students

National Science Foundation, Scholarships for Students in STEM Program (S-STEM)

PI: Christy Wheeler-West, University of South Alabama

\$98,901, **Funded**, 2023-2024, Role: Co-PI

Collaborative planning grant: A partnership to build persistence to math-intensive degrees in low-income students

National Science Foundation, Robert Noyce Teacher Scholarship Program

PI: Susan Ferguson, University of South Alabama

\$1,199,945, **Funded**, 2023-2028, Role: Key Personnel

The Noyce pathway to mathematics 2: An integrated STEM initiative focused in diversity, equity, and inclusion.

Not Funded

National Academies of Sciences, Gulf Research Program K-8 (GRPK8)

PI: Katie McCarrison, University of South Alabama

\$749,097, **Not funded**, 2026-2028, Role: Co-PI

Coastal Sustainability Scholars: Promoting place-based learning and civic engagement in Baldwin County, Alabama

Office of Naval Research

PI: **Drew Gossen**

\$572,460, **Not funded**, 2026-2028, Role: PI

The AI Classroom Connection: Empowering Teachers to Prepare Students for Tomorrow's STEM Careers

National Science Foundation, Discovery Research PreK-12 (DRK-12)

PI: Lu Ding, University of South Alabama

\$448,359, **Not funded**, 2024-2028, Role: Co-PI

Mind Reset: Teaching an Ontological Framework to Overcome Science Misconceptions to Teachers

Environmental Protection Agency, subaward through Louisiana State University

Subaward PI: Drew Gossen

\$591,669, Not funded, 2024-2029, Role: PI

Gulf Coast Coalition for Enhanced Indoor Air Quality and Carbon Emission Reduction in K-12 Schools

National Science Foundation, Advancing Informal STEM Learning Program (AISL)

PI: Lu Ding, University of South Alabama

\$259,104, Not funded, 2024-2025, Role: Co-PI

AI Odyssey: A board game for middle schoolers to co-play-learn with parents about AI literacy

National Science Foundation, Improving Undergraduate STEM Education Program (IUSE:EDU)

PI: Ryan Nixon, Brigham Young University

\$49,987, Not funded, 2023-2024, Role: Co-PI

Specialized science courses for pre-service elementary teachers: Dilemmas and decisions

National Science Foundation, Partnerships for International Research and Education (PIRE)

PI: Guirong Yan, Missouri University of Science and Technology

\$1,500,000, Not funded, 2022-2025, Role: Co-PI

One world: Overcoming barriers humans encounter when taking climate actions

Mobile County Commission, American Rescue Plan Act

PI: Trey Stefurak, University of South Alabama

\$1,629,640, Not funded, 2021-2025, Role: Co-PI

Williamson college launchpad

National Science Foundation, Innovative Technology Experiences for Students and Teachers

PI: Kallianne Neumann, Oklahoma State University

\$1,164,606, Not funded, 2019, Role: Co-PI

Developing marine science VR experiences for students in landlocked states to promote STEM learning, interest, and careers.

Internal Funding

University of South Alabama, College of Education and Professional Studies

PI: Drew Gossen, University of South Alabama

\$3,298, **Funded**, 2022-2023

Connecting in- and out-of-school learning experiences to STEM beliefs and career aspirations in an urban school pipeline.

University of South Alabama, Social Justice Initiative

PI: Shenghua Wu, University of South Alabama

\$10,000, **Funded**, 2022-2023, Role: Co-PI

Fostering a transformative and collaborative learning community to promote social justice, equity, and diversity in engineering education.

Presentations

National and International Conference Presentations (Refereed)

- Wu, S., Islam, S., **Gossen, D.**, & Oyelere, A. (2025). Engineering inclusion: Understanding faculty and student views. Paper presented at the 2025 ASEE Annual Conference & Exposition Conference, Montreal, Canada.
- Wilcox, J., **Gossen, D.**, & Nixon, R. (2025). Impacts of a specialized science Course on PSTs' content knowledge and views. Poster presented at the Annual Conference of Association for Science Teacher Education, Long Beach, CA.
- Gossen, D.**, Byrd, K., & Johnson, T. (2024). Collaboration of STEM education faculty to plan integrated STEM workshops for students. Paper presented at the Annual Conference of Association for Science Teacher Education, New Orleans, LA.
- Gossen, D.** (2024). Effect of a long-term professional development on science teacher attitudes, practice, and connections. Poster presented at the Annual Conference of Association for Science Teacher Education, New Orleans, LA.
- Wilcox, J., Nixon, R., & **Gossen, D.** (2024). Innovating the science content courses for elementary teachers. Paper presented at the Annual Conference of Association for Science Teacher Education, New Orleans, LA.
- Gossen, D.** (2023). Student STEM learning experiences and beliefs in an urban school setting. Paper presented at the Annual Conference of School Science and Mathematics Association, Colorado Springs, CO.
- Gossen, D.** (2022). The influence of secondary STEM courses on STEM career choices. Paper presented at the Annual Conference of School Science and Mathematics Association, Missoula, MT.
- Gossen, D.**, Byrd, K., & Gaston, J. (2022). Elementary and middle school integrated STEM teachers' perspectives on STEM education. Paper presented at the Annual Conference of School Science and Mathematics Association, Missoula, MT.
- Gossen, D.** (2022). STEM coursework and the development of STEM self-efficacy, outcome expectations, interests, and goals. Paper presented at the Annual Conference of Association for Science Teacher Education, Greenville, SC.
- Gossen, D.** (2021). "It got me hooked": How undergraduates viewed their in- and out-of-school learning experiences. Paper presented at the Annual Conference of School Science and Mathematics Association, Cincinnati, OH.
- Gossen, D.**, Ivey, T., & Hathcock, S. (2021). STEM learning experiences as a foundation for career choice. Paper presented at the Annual Conference of Association for Science Teacher Education, Salt Lake City, UT.

Gossen, D. (2020). The relationship between learning experiences and STEM self-efficacy. Paper presented at the Annual Conference of School Science and Mathematics Association, Minneapolis, MN.

Hathcock, S., **Gossen, D.**, & Ivey, T. (2020). Merging perspectives and changing conceptions: Preservice teachers' developing conceptions of lunar phases through formative assessments. Paper presented at the Annual Conference of Association for Science Teacher Education, San Antonio, TX.

Gossen, D., Hammack, R., & Utey, J. (2019). Increasing elementary students' understanding and awareness of engineering through a summer camp. Paper presented at the Annual Conference of School Science and Mathematics Association, Salt Lake City, UT.

Gossen, D., Hathcock, S. & Ivey, T. (2019). Exploring nuances in student responses to uncover conceptual change. Paper Presented at the Annual Conference of School Science and Mathematics Association, Salt Lake City, UT.

Sanogo, A., Olson, A., & **Gossen, D.** (2019). Virtual reality experiences effect on students' science content knowledge and attitudes. Paper presented at the Annual Conference of School Science and Mathematics Association, Salt Lake City, UT.

Hathcock, S., Ivey, T., & **Gossen, D.** (2019). Preservice teachers learning formative assessment through formative assessment. Paper presented at the Annual Conference of Association for Science Teacher Education, Savannah, GA.

Hathcock, S., **Gossen, D.**, & Ivey, T. (2019). Why we can't say goodnight moon: Preservice elementary teachers' fragile moon understandings. Paper presented at the Annual Conference of Association for Science Teacher Education, Savannah, GA.

Gossen, D., Hathcock, S. & Ivey, T. (2018). How preservice teachers perceive meaningful learning experiences as a guide for teaching. Paper Presented at the Annual Conference of School Science and Mathematics Association, Little Rock, AR.

Regional Presentations for National Organizations (Refereed)

Gossen, D., Byrd, K.O., & Giles, R.M. (2025). Experiencing STEM outdoors: Preparing preservice teachers to use nature as a laboratory. Poster presented at the 12th Annual SEEA Conference & Research Symposium, Biloxi, MS.

Gossen, D. (2024). In-person and web-based professional development: Teacher responses to both experiences in a PD cohort. Paper presented at the Annual Conference of the Southeast Region of the Association for Science Teacher Education, Long Beach, MS.

Gossen, D. (2023). Teacher interactions and strategy implementation in a STEM professional development. Paper presented at the Annual Conference of the Southeast Region of the Association for Science Teacher Education, Miami, FL.

- Tucker, C., Byrd, K., **Gossen, D.**, & Morrison, K. (2023). Teacher self-efficacy and preparation for STEM project-based learning. Paper presented at the Annual Conference of the Mid-South Educational Research Association, Pensacola, FL.
- Byrd, K., **Gossen, D.**, Gaston, J. (2022). Elementary and middle school STEM teachers' perceptions of integrated STEM education. Paper presented at the Annual Conference of the Mid-South Educational Research Association, Little Rock, AR.
- Gossen, D.** (2022). The effect of high school courses on STEM career interest. Paper presented at the Annual Conference of the Southeast Region of the Association for Science Teacher Education, Gulf Shores, AL.
- Gossen, D.** (2021). STEM learning experiences in and out of school and STEM attitudes. Paper presented at the Annual Conference of the Mid-South Educational Research Association, New Orleans, LA.
- Gossen, D.** (2020). Student perceptions of STEM classroom learning factors. Paper presented at the Annual Meeting of the Southwest Section of the Association for Science Teacher Education, Huntsville, TX.
- Gossen, D.**, Hathcock, S., & Ivey, T. (2019). Preservice teachers, formative assessment, and the moon: How changing perspectives influences changing conceptions. Paper presented at the Annual Meeting of the Southwest Section of the Association for Science Teacher Education, Fayetteville, AR.
- Gossen, D.** & Utley, J. (2019). Effect of an engineering camp on elementary students' understanding of engineering and attitudes toward engineering. Poster presented at the 2019 American Society for Engineering Education, Midwest Section, Wichita, KS.
- Utley, J., **Gossen, D.**, & Ivey, T. (2019). Influencing elementary students perceptions about the work of an engineer. Paper presented at the 2019 American Society for Engineering Education, Midwest Section, Wichita, KS.
- Gossen, D.**, Hathcock, S., & Ivey, T. (2018). Preservice teachers' concept of lunar phases: How understanding misconceptions directs teaching practice. Paper presented at the Annual Meeting of the Southwest Section of the Association for Science Teacher Education, Norman, OK.
- Hathcock, S., Ivey, T., & **Gossen, D.** (2018). Modeling formative assessment in elementary science methods: Preservice teachers' perceptions and understandings of photosynthesis. Paper presented at the Annual Meeting of the Southwest Section of the Association for Science Teacher Education, Norman, OK.

Local and University Presentations

- Wu, S., Islam, S., & **Gossen, D.** (2023). Building a culturally responsive and inclusive engineering curriculum: An investigation of engineering students' perceptions on diversity. Poster presentation at the USA Conference on Teaching and Learning, Mobile, AL

Wu, S., Islam, S., & **Gossen, D.** (2022). Supporting social justice research with internal funding.
Panel presentation at the USA Conference on Teaching and Learning, Mobile, AL

Professional Development and Workshops Presented

From wonder to understanding: Learning with phenomena and sensemaking, 3 hour workshop presented at the Southeastern Regional Robert Noyce Conference, Mobile, AL, July 2025

Teaching for understanding: Building physical science concepts that last, 1 hour workshop presented at the Southeastern Regional Robert Noyce Conference, Mobile, AL, July 2025

Inspiring futures: Making STEM career exploration a meaningful part of your curriculum, 1 hour workshop presented as part of the NSTA Scaling Up for STEM Webinar Series, Virtual, November 2024

Creating STEM pathways through engaging learning experiences, 1 hour workshop presented as part of the NSTA Scaling Up for STEM Webinar Series, Virtual, October 2024

Building physics and mathematics concepts together, 1 hour workshop presented at the Southeastern Regional Robert Noyce Conference, Mobile, AL, July 2024

Developing student ideas in physical science, 1 hour workshop presented at the Southeastern Regional Robert Noyce Conference, Mobile, AL, July 2024

Phenomena and inquiry learning in physical science, 1 hour workshop presented at the Southeastern Regional Robert Noyce Conference, Mobile, AL, May 2023

Building conceptual understanding in physics, 1 hour workshop presented at the Southeastern Regional Robert Noyce Conference, Mobile, AL, May 2023

Collaborative STEM integration in the secondary classroom, 3 hour PD for ASTEC Charter School presented with Dr. Juliana Utley, Oklahoma City, OK, June 2019

Putting the STEM together, Professional development workshop presented at the STEM Teacher Institute, Stillwater, OK, June 2019

Integrating engineering design challenges into the science curriculum, Professional development workshop presented at the STEM Teacher Institute, Stillwater, OK, June 2018.

Nature of science in science teaching, Professional development workshop for Piedmont Public Schools, Piedmont, OK, April, 2017

Vertical alignment in secondary science curriculum, Professional development workshop for Piedmont Public Schools, Piedmont, OK, January, 2016

Transforming word problems into lab activities. Professional development for Piedmont Public Schools, Piedmont, OK, March, 2013

Other Presentations

What are opportunities for STEM careers? Presentation to middle school students at Booker T. Washington Middle School, Mobile, AL, November, 2023

The magic of magnetism. Presentation to elementary students at Fonde Elementary School, Mobile, AL, June, 2023

The water princess: A STEM connection to literacy. Presentation to elementary students at Fonde Elementary School, Mobile, AL, March, 2023

Other Scholarly Works

Gossen, D. (2024). National Science Teaching Association Scaling Up for STEM evaluation report. Daphne, AL.

Gossen, D. (2023). National Science Teaching Association Scaling Up for STEM evaluation report. Daphne, AL.

Utle, J. & **Gossen, D.** (2017). NASA National Buoyancy Lab Lessons: STEM on Station: evaluation report – Part 2. (CRSTL-2017-005). Stillwater, OK: Center for Research on STEM Teaching and Learning, Oklahoma State University.

Service

Professional

2024-2025 President-Elect, Southeast Region of the Association for Science Teacher Education

2018-Present Reviewer of Manuscripts for the School Science and Mathematics Journal

2023-Present Member, Equity Committee, Association for Science Teacher Education

2023-Present Member, Publications Committee, School Science and Mathematics Association

2025 Thread Coordinator, Association for Science Teacher Education Annual Conference

2024 Member, Alabama State Department of Education Textbook Committee

2024 Presider, Annual Conference of Association for Science Teacher Education, New Orleans, LA.

2023 Reviewer of manuscripts for the Journal of STEM Education Research

2023 Reviewer of manuscripts for the International Journal of Education in Mathematics, Science, and Technology

2023 Reviewer of Conference Proposals for the Association for Science Teacher Education

2023-2024 Reviewer of Conference Proposals for the School Science and Mathematics Association

2020-2022 Member, Conference Planning Committee, Association for Science Teacher Education

2020 Member, Convention Operations and Virtual Implementation Team, Annual School Science and Mathematics Association Convention, Held Online

2019 Member, Convention Attendance and Registration Team, Annual School Science and Mathematics Association Convention, Salt Lake City, UT

University

2025 Member, 2025 Employee Annual Giving Campaign Committee

2022-2023 Member, Méple Mentoring Program

College

2023-Present Member, CEPS Faculty Council, College of Education and Professional Studies

2021-Present Member, Recruitment, Retention, and Marketing Committee, College of Education and Professional Studies

Department

2025 Member, Leadership and Teacher Education Department Chair Position Search Committee

2025 Member, Leadership and Teacher Education Reading Position Search Committee

2022-2023 Member, Ed.S. Committee for Camryn Tucker

2021-Present Member, Master of Elementary Education Comprehensive Exam Committee

2021-Present Member, K-6 Education Program Committee, Department of Leadership and Teacher Education

2021-Present Member, Alternative Master of Elementary Education Program Committee, Department of Leadership and Teacher Education

2021-Present Member, Traditional Master of Elementary Education Program Committee, Department of Leadership and Teacher Education

Community

2024 Reviewer, Clark-Shaw Middle School Science Fair

Honors/Awards

Top Prof, University of South Alabama Mortar Board Honor Society, 2023

SSMA Dissertation Award, School Science and Mathematics Association's Outstanding Dissertation, 2021

1st Place Best Paper Award (with Dr. Juliana Utley and Dr. Toni Ivey), 2019 American Association of Engineering Education Midwest Section conference, September, 2019

1st place Poster Presentation (with Dr. Juliana Utley), 2019 American Association of Engineering Education Midwest Section conference, September, 2019

Outstanding Graduate Research Assistant for the School of Teaching, Learning, and Educational Sciences, 2018-2019 school year, College of Education, Health, and Aviation, Oklahoma State University, May 2019

Professional Communities and Development

NSF ITEST Proposal Development Workshop, National Science Foundation STEM Learning and Research Center, October 25-26, 2023

Introduction to Hybrid Flexible Course Design, University of South Alabama Innovation in Learning Center, November 3, 2023

STEM Faculty Learning Community, University of South Alabama, 2021-2022

New Faculty Scholars, Innovation and Learning Center, University of South Alabama, 2021-2022

Professional Affiliations

National Association for Research in Science Teaching

Association for Science Teacher Education

School Science and Mathematics Association

National Science Teachers Association

Alabama Science Teachers Association

Mid-South Educational Research Association