

Hanan Alyami

Assistant Professor, Mathematics Education

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Education

Purdue University, West Lafayette, Indiana

August 2022, PhD, Curriculum & Instruction, Mathematics Education

Dissertation title: *Preservice Mathematics Teachers' Conceptions of Radian Angle Measure*

Committee: Signe E. Kastberg (Chair), Lynn Bryan, Rachael Kenney, and Jane Keiser

May 2020, Graduate Certificate, Integrated STEM Education

Purdue University, Fort Wayne, Indiana

December 2014, MS, Applied Mathematics, and Operations Research

May 2014, Graduate Certificate, Applied Statistics

King Faisal University, Saudi Arabia

January 2010, BS Ed., Mathematics

Teaching

Purdue University in Fort Wayne, Department of Teacher Education

Visiting Assistant Professor (August 2022 – present)

Courses taught (in-person):

Mathematics in the Elementary School Methods (Since Fall 2022)

Teaching Elementary School Mathematics through Problem Solving (Since Fall 2022)

Mathematics Content for Elementary Teachers I (Spring 2023)

Mathematics Content for Elementary Teachers III (Since Spring 2024)

Purdue University at West Lafayette, Department of Curriculum and Instruction

Graduate Teaching Assistant (August 2017 – May 2022)

Courses taught (in-person):

Secondary Methods of Integrated STEM Education (Since Fall 2017)

Mathematics in the Elementary School (Fall 2021)

Courses taught (online):

Secondary Methods of Integrated STEM Education (Since Spring 2021, [Student Evaluations](#))

K-12 STEM Induction Professional Learning Community

- Culturally Responsive Pedagogy (Fall 2020)

- Differentiated Instruction and Assessment (Spring 2021)

- Becoming a Reflective Educator (Fall 2021)

- Action Research (Spring 2022)

Courses designed:

Supporting Scholarly Practices in Mathematics Methods for Prospective Mathematics Teacher Educators.

Ivy Tech Community College at Fort Wayne, Department of Liberal Arts and Sciences

Full-time Mathematics Instructor (January 2015 – May 2017)

Courses taught:

Quantitative Reasoning (Math 123, [Student Evaluations](#))

Technical Math (Math 122)

Trigonometry with Analytic Geometry (Math 137)

Statistics (Math 200)

Purdue University at Fort Wayne, Department of Mathematical Sciences

Graduate Teaching Assistant (August 2013 – December 2014)

Courses taught:

Elementary Algebra (MA 109, [Student Evaluations](#))

Intermediate Algebra (MA 113)

Ministry of Education, Saudi Arabia

Mathematics Teacher Intern (2008 – 2009)

Dhahran 1st High School, Saudi Arabia

Ministry of Education, Saudi Arabia

Mathematics Teacher Intern (2007 – 2008)

Dhahran 2nd High School, Saudi Arabia

Publications

Journal Articles

Alyami, H. (2025). Unpacking conceptual and procedural meanings for radian angle measure through a curricular sequence: Henry's case. *International Journal of Mathematics Thinking and Learning*.

Alyami, H. (2025). Radian π : Concept images evoked by representations of radian angle measure. *Mathematical Thinking and Learning*. <https://doi.org/10.1080/10986065.2024.2338893>

Alyami, H. (2024). Preservice teachers' proportional reasoning with angle measure conversion. *International Journal of Research in Undergraduate Mathematics Education*. <https://doi.org/10.1007/s40753-024-00257-z>

- Alyami, H.** (2020). Textbook representation of radian angle measure: The need to build on the quantitative view of angle. *School Science and Mathematics*. 120(1), 15–28.
<https://doi.org/10.1111/ssm.12380>
- Alyami, H.** (2023). The mathematics of Sewing. *Mathematics Teacher: Learning and Teaching Pre-K–12*. 116(8), 644.
- Alyami, H.** (2022). A radian angle measure and light reflection activity. *Mathematics Teacher: Learning and Teaching Pre-K–12*. 115(6), 422–431.
<https://doi.org/10.5951/MTLT.2021.0217>
- Alyami, H.** (2022). Defining radian: Provoked concept definitions of radian angle measure. *Research in Mathematics Education*. 25(2), 154–177
<https://doi.org/10.1080/14794802.2022.2041470>
- Alyami, H., & Asunda, P.** (2021). Oil-spill eSTEMation: Using mathematical estimation and modeling to rescue our oceans. *Science Scope*. 44(5), 28–36.
- Alyami, H., & Bryan, L.** (2025). Mathematical “Mirror Logic”: Examining Preservice Mathematics Teachers’ Spatial Thinking about Radian in integrated STEM Context. *Research in Integrated STEM Education*. <https://doi.org/10.1163/27726673-bja00029>
- Alyami, H., & Mentzer, N.** (2025). Secondary Preservice Teachers’ Disciplinary Identity in Integrated STEM Collaboration. *Journal of STEM Teacher Education*. 59(1), p. 33–45
<https://doi.org/10.61403/2158-6594.1523>
- Suazo-Flores, E., **Alyami, H.**, Walker, W. S., Aqazade, M., & Kastberg, S. (2021). A call for exploring mathematics education researchers’ interdisciplinary research practices. *Mathematics Education Research Journal*. <https://doi.org/10.1007/s13394-021-00371-0>
- Suazo-Flores, E., Walker, W. S., Kastberg, S., Aqazade, M., & **Alyami, H.** (2024). Mathematics education researchers’ practices in interdisciplinary collaborations: Embracing different ways of knowing. *Mathematics Education Research Journal*. <https://doi.org/10.1007/s13394-024-00489-x>
- Conference Proceedings
- Alyami, H.** (2024). Elementary preservice teachers’ angle measure approaches given a circular context. In K. Kosko, J. Caniglia, S. Courtney, M. Zolfaghari, & G. Morris (Eds.), *Proceedings of the forty-sixth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. (pp. 427–433). Kent State University
- Alyami, H.** (2023). “ $\frac{\pi}{5}$... wasn't on the unit circle”: A preservice mathematics teacher's meanings for radian. In T. Lamberg, & D. Moss (Eds.), *Proceedings of the 45th annual meeting of the*

North American chapter of the International Group for the Psychology of Mathematics Education. (pp. 766–776). University of Nevada, Reno.

- Alyami, H.** (2019). Negotiating disciplinary identities during an interdisciplinary collaboration meeting. In S. Otten, A. G. Candela, Z. de Araujo, C. Haines, & C. Munter, (Eds.), *Proceedings of the 41st annual meeting of the North American chapter of the International Group for the Psychology of Mathematics Education.* (pp. 1244–1248). University of Missouri.
- Alyami, H.** (2019). Teaching across disciplinary boundaries: A case study of a preservice teacher teaching outside her discipline. In S. Otten, A. G. Candela, Z. de Araujo, C. Haines, & C. Munter, (Eds.), *Proceedings of the 41st annual meeting of the North American chapter of the International Group for the Psychology of Mathematics Education.* (pp. 1249–1253). University of Missouri.
- Alyami, H.** & Bryan, L. (2022) “Mirror logic”: A preservice mathematics teacher’s thinking about radian in the context of light reflection. In A. E. Lischka, E. B. Dyer, R. S. Jones, J. Lovett, J. Strayer, & S. Drown, (Eds.), *Proceedings of the forty-fourth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* (pp. 81–90). Middle Tennessee State University.
- Kocabas, S., Kastberg, S. E., Grant, M., & **Alyami, H.** (2023). Pre-Service Elementary Teachers’ Framing of Mathematical Discussions After Problem-Solving Through Mursion™ Simulation. In T. Lamberg, & D. Moss (Eds.), *Proceedings of the 45th annual meeting of the North American chapter of the International Group for the Psychology of Mathematics Education.* (pp. 511–520). University of Nevada, Reno.
- Melville, M., Berry, B., Scharfenberger, L., **Alyami, H.**, Sutherland, M., Hoffman, A., Roberts, E., Meyer, D., & McGlennen, S. (2024). A new working group: Supporting teachers and teacher educators with implementing building thinking classrooms. In K. Kosko, J. Caniglia, S. Courtney, M. Zolfaghari, & G. Morris (Eds.), *Proceedings of the forty-sixth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* (pp. 2172–2174). Kent State University.
- Suazo-Flores, E., Walker III, W. S., **Alyami, H.**, Kastberg, S. E., & Aqazade, M. (2022) Mathematics education researchers’ practices in interdisciplinary collaborations: Embracing ways of knowing. In A. E. Lischka, E. B. Dyer, R. S. Jones, J. Lovett, J. Strayer, & S. Drown, (Eds.), *Proceedings of the forty-fourth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* (pp. 81–90). Middle Tennessee State University.
- Suazo-Flores, E., Walker III, W. S., **Alyami, H.**, Aqazade, M., & Kastberg, S. E. (2021). Understanding practices in an interdisciplinary group from a case study. In D. Kolloche,

(Ed.), *Exploring new ways to connect: Proceedings of the Eleventh International Mathematics Education and Society Conference*. (pp. 986–994). Tredition GmbH.

- Suazo-Flores, E., Walker III, W. S., **Alyami, H.**, Aqazade, M., & Kastberg, S. E. (2021). Conceptualizing practices in interdisciplinary groups from a mathematics education researcher's perspective. In D. Olanoff, K. Johnson & S. Spitzer, (Eds.), *Proceedings of the 43rd annual meeting of the North American chapter of the International Group for the Psychology of Mathematics Education*. (pp. 824–828). Philadelphia, PA.
- Suazo-Flores, E., Walker III, W. S., **Alyami, H.**, Aqazade, M., Kastberg, S. E., & Hahn, S. (2019). Mathematics education researchers' interdisciplinary collaboration practices. In S. Otten, A. G. Candela, Z. de Araujo, C. Haines, & C. Munter, (Eds.), *Proceedings of the 41st annual meeting of the North American chapter of the International Group for the Psychology of Mathematics Education*. (pp. 650–654). University of Missouri.
- Zolfaghari, M. & **Alyami, H.** (2023). Elementary Preservice Teachers Suggested Instructional Strategies for Equipartitioning. In T. Lamberg, & D. Moss (Eds.), *Proceedings of the 45th annual meeting of the North American chapter of the International Group for the Psychology of Mathematics Education*. (pp. 391–392). University of Nevada, Reno.
- Zolfaghari, M. & **Alyami, H.** (2025). Exploring the Intersection of Equal Partitioning and Geometric Visualization in Early Fraction Learning. *Proceedings of the forty-seventh annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. (pp. 1110–1111). Pennsylvania State University.
- Zolfaghari, M., Austin, C. K., **Alyami, H.**, Kosko, K. (2024). Evaluating mathematical knowledge for teaching fractions: Development and validation of the MKT-Fractions measure. In K. Kosko, J. Caniglia, S. Courtney, M. Zolfaghari, & G. Morris (Eds.), *Proceedings of the forty-sixth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. (pp. 587–588). Kent State University.

Book Chapters

- Kastberg, S., Hord, C., & **Alyami, H.** (2022). Proportional reasoning to move toward linearity. In X. Yan, R. Tzur, & H. Thouless (Eds.), *Enabling Mathematics Learning of Struggling Students: International Perspectives*. (pp. 337–360). Springer.
- Suazo-Flores, E. & **Alyami, H.** (2022). Transcending school mathematics and science while making art. In D.C. Cox & S.R. Harper (Eds.) *Math in Action: Relevant Tasks for Building Mathematical Literacy Grades 9-12*. Reston, VA: National Council of Teachers of Mathematics.

Submitted Manuscripts

Alyami, H. (submitted). Elementary preservice teachers' mathematical strategies given a circular context, *School Science and Mathematics*.

Alyami, H. (submitted). Mathematizing Light to Make Art: A Design Activity. *Mathematics Teacher: Learning and Teaching Pre-K–12*.

Alyami, H., & McGlennen, S. (Submitted). The Painted Cube: Connecting Spatial Visualization & Algebraic Generalization. *Mathematics Teacher: Learning and Teaching Pre-K–12*.

Alyami, H., & Zolfaghari, M. (submitted). Mathematical Knowledge for Teaching and Suggested High Cognitive Demand Equipartitioning Tasks: Insights from Elementary Preservice Teachers. *Research in Mathematics Education*.

In-progress Manuscripts

Alyami, H. *Teaching across disciplinary boundaries*. Unpublished manuscript, Department of Teacher Education, Purdue University in Fort Wayne, IN, USA.

Zolfaghari, M., & **Alyami, H.** *Systematic Literature Review of Spatial Reasoning and Fractions*. Unpublished manuscript, Department of Teacher Education, Purdue University in Fort Wayne, IN, USA.

Refereed Conference Presentations

Alyami, H. (2024). *Mathematizing light to make art: An integrated STEM activity*. National Council of Teachers of Mathematics. Chicago, IL.

Alyami, H. (2024). *Mathematizing light to make art: An integrated STEM activity*. Hoosier Association of Science Teachers Inc. & Indiana Council of Teachers of Mathematics. Indianapolis, IN.

Alyami, H. (2023). *Mathematical “mirror logic”: Preservice mathematics teachers’ thinking about radian in the context of light reflection*. Association of Mathematics Teacher Educators. New Orleans, LA.

Alyami, H., Suazo-Flores, E., & Roetker, L. (2020, January). *Oil-spill eSTEMation: Rescuing our oceans*. Paper presented at the Fifth Annual Indiana STEM Education Conference, West Lafayette, IN.

Alyami, H., Suazo-Flores, E., Walker, W. S., Kastberg, S. E., & Aqazade, M. (2020). *Interdisciplinary research practices: The case of mathematics education researchers*. American Educational Research Association. San Francisco, CA.

Aqazade, M., Flores, E. S., **Alyami, H.,** Walker III, W. S., Hahn, S., & Kastberg, S. E. (2019). *Challenges and strategies for researchers in STEM research teams*. Paper presented at the Fourth Annual Indiana STEM Education Conference, West Lafayette, IN.

Kocabas, S., Kastberg, S. E., Grant, M., & **Alyami, H.** (2023). *Pre-Service Elementary Teachers' Initiating a Mathematical Discussion by Engaging in Mursion™ Simulation*. American Educational Research Association. Chicago, IL.

Walker III, W. S., Flores, E. S., Kastberg, S. E., Aqazade, M., & **Alyami, H.** (2023). *Practices That Support Mathematics Education Researchers' Work in Interdisciplinary Collaborations*. American Educational Research Association. Chicago, IL.

Grants

Alyami, H. (Summer 2026), iSEE Geometry: Imagining, Spatializing, Exploring, and Experiencing Geometry. Summer Instructional Design Grant, Purdue Fort Wayne, supported by the Center for the Enhancement of Learning and Teaching (CELT)

Alyami, H. (Summer 2026), LUMInOUS: Learning & Using Mathematics Integration Opportunities in Undergraduate STEM. Indiana Data Mine Faculty Research Grant, Purdue Fort Wayne, supported by Lilly Endowment

Awards

2024

Leepoxy Plastics, Inc. Award for Excellence in Undergraduate Teaching, Leepoxy Plastics, Inc.

Recognizes excellence in undergraduate teaching in which preservice elementary teachers engaged in an integrated STEM learning experience involving angle measure and light reflection to create art. The selection committee acknowledged disciplinary and pedagogical expertise and the way the activity was designed to engage prospective teachers in hands-on application, collaboration, and authentic learning.

Pippert Science Research Scholar Award for Research Excellence.

Established by Professor Emeritus Raymond Pippert to recognize and honor a College of Science faculty member's excellence in research.

2020 – 2021

College of Education Dean's Graduate Students Support Program at Purdue University
Graduate School/College Scholarship for Graduate Students Impacted by COVID-19

Awarded to graduate students who were experiencing unexpected financial hardships as a result of the global pandemic.

Mike Keedy Graduate Scholarship in Mathematics Education

Awarded to graduate students in mathematics education who demonstrate excellence in research and teacher education with contributions to the mathematics education community.

Service

2022 – present

Student Affairs Committee Chair at Purdue University in Fort Wayne
University Advisor, Dons for Education Student Organization
Advisory Board Member, Purdue Fort Wayne Student Research and Creative Endeavor
Symposium
Department Editor (STEM Stories) for *Indiana Mathematics Teacher Journal*
STEM Advisory Board member, Fort Wayne, IN.

2020 – 2022

Elected Hoosier Association of Mathematics Teacher Educators' (HAMTE's) Graduate Student
Outreach Coordinator

2020 – 2021

Curriculum & Instruction Graduate Student Association's (CIGSA's) Web Master
Committee Member, Mathematics Education Community Climate

2019 – 2020

Planning Committee Member, 5th Annual Indiana STEM Education Conference
Chair of the Mathematics Education Community-Development Committee at Purdue University

Journal Reviewer

Journal of Mathematical Behavior.
Mathematics Teacher: Learning and Teaching Pre-K–12.
School Science and Mathematics.
The Journal of Educational Research

Conference Proposal Reviewer

The North American Chapter of the International Group for the Psychology of Mathematics
Education annual meeting
Indiana Mathematics Education Research Symposium annual meeting
Indiana STEM Education Conference annual meeting