

Deniz Ercan

Gainesville/FL | deniz.ercan@ufl.edu | denizercana.com | linkedin.com/in/denizercana/

Previously published as Deniz Celik

Research Summary

Ph.D. candidate in Educational Technology studying how learning technologies can support meaningful, engaging, and active learning experiences. My research sits at the intersection of learning sciences, game-based learning, and human-computer interaction, with a focus on how learners construct knowledge, develop higher-order thinking skills, and engage with interactive learning environments. My work spans learning games, learning by design, and human-centered technology design. My current research examines GenAI-supported learning experiences, particularly learning by design and co-designing with GenAI.

Education

University of Florida, Ph.D. in Curriculum and Instruction Aug 2023 – Expected 2027

- **Specialization:** Educational Technology
- **Advisor:** Dr. Daryn Dever
- **Co-Advisor:** Dr. Pavlo (Pasha) Antonenko

Ege University, M.S. in Educational Technology 2021 – 2023

- **Advisor:** Dr. Firat Sarsar

Yıldız Technical University, B.S. in Educational Technology (Honor) 2017 – 2021

- Erasmus+ Learning Mobility, University of Córdoba, Spain (2018 – 2019)

Teaching Experience

University of Florida | School of Teaching and Learning

EME 3813 - Technology-Enhanced Learning Environments Fall 2026

Supervisor: Dr. Bojan Lazarevic

A 16-week undergraduate course on learning theories, instructional design, and technology-enhanced learning environments.

Instructor of Record | 11 students | Face-to-face

- Lead face-to-face instruction and facilitate interactive learning activities.
- Assess student work and provide formative feedback throughout the course.

EME 2040 - Introduction to Educational Technology Fall 2026

Supervisor: Dr. Bojan Lazarevic

A 16-week undergraduate course introducing educational technology, digital literacy, multimedia, and emerging technologies in education.

Instructor of Record | 20 students across two sections | Online

- Deliver online instruction and facilitate synchronous and asynchronous learning activities.
- Assess student work and provide formative feedback to support student learning.

IDS 2935 - Making Sense: Understanding the World with Data and AI Fall 2024

A 16-week course exploring the intersection of Artificial Intelligence and theories of learning through student-teacher interaction data.

Supervisor: Dr. Anthony Botelho | 69 students

Role: Third Instructor

- Facilitated online discussions and lab sessions focused on data, artificial intelligence, and learning.
- Supported students with course concepts and technical activities.

EME 3813 - Technology-Enhanced Learning Environments Spring & Summer 2024

Supervisor: Dr. Bojan Lazarevic

A 16-week course introducing the principles of human learning and the design of technology-enhanced learning environments.

Instructor of Record

Spring 2024: 55 students | GatorEvals overall instructor rating: 4.4/5

Summer 2024: 28 students | GatorEvals overall instructor rating: 4.3/5

- Delivered eight instructional modules and designed interactive class activities.
- Assessed student work and provided individualized formative feedback.

EME 2040 - Introduction to Educational Technology

Fall 2023

Supervisor: Dr. Bojan Lazarevic

A 16-week undergraduate course covering digital literacy, productivity tools, multimedia design, and web-based instructional tools.

Instructor of Record | 48 students across three sections | GatorEvals: 4.5/5

- Delivered face-to-face instruction for a 22-student section and designed interactive in-class learning activities.
- Assessed assignments and provided formative feedback to support student learning.

Ege University | Türkiye

INV401 - Entrepreneurship and Innovation-Focused Research Processes

Spring 2022

An interdisciplinary course focused on project development, mentor-mentee relationships, and collaborative innovation.

Role: Second Instructor

Supervisor: Dr. Ozge Altun

- Delivered a lecture on project design.
- Supported course instruction alongside rotating faculty.

Publications

Peer-Reviewed Journal Articles

1. Rahimi, S., Li, H., Esmailigouyar, S., **Ercan, D.**, & Botelho, A. (2026). A rubric-guided multimodal approach using high-capacity LLMs provides psychometrically sound creativity assessment in learning games. *Creativity Research Journal*. <https://doi.org/10.1080/10400419.2026.2638384>
2. Rahimi, S., Esmailigoujar, S., **Ercan, D.**, Gao, R., & Keawphonkrang, S. (in press). Designing digital games to foster growth mindset in PreK–12 education: A systematic review. *Simulation & Gaming*.
3. Kirmiziyuz, E., **Ercan, D.**, & Bilgin, C. U. (2021). Designing, developing, and implementing an educational mobile game on electrical energy conversion and recycling. *Yildiz Journal of Educational Research*, 6(1), 48–60.

Manuscripts Under Review

4. **Ercan, D.**, & Rahimi, S. (under review). Use of Generative Artificial Intelligence in STEM Learning Games: A Systematic Scoping Review.
5. Rahimi, S., Esmailigoujar, S., **Ercan, D.**, & Shute, V. J. (under review). Stealth assessments in technology-rich learning environments: A systematic review of implementation, modeling, and psychometric quality. Preprint available at https://doi.org/10.31234/osf.io/cm96z_v1
6. Rahimi, S., Esmailigoujar, S., **Ercan, D.**, & Gao, R. (under review). Doing Better Things Rather Than Doing Things Better with Generative AI: Scaling Design- and Implementation-Intensive Pedagogies through a Human-in-the-Loop Approach.

Book Chapters

7. Rahimi, S., **Ercan, D.**, & Gao, R. (under review). Game-based classroom assessments for learning: Connecting play, learning, and evidence.

Conference Proceedings (Peer-Reviewed Conference)

8. **Ercan, D.**, & Rahimi, S. (2026, June 15–19). How generative AI is used in learning games: A systematic scoping review in K–12 settings [Poster presentation]. *International Society of the Learning Sciences Annual Meeting (ISLS)*, Irvine, CA, United States.

9. Rahimi, S., Esmaeiligoujar, S., **Ercan, D.**, Babae, M., & Gao, R. (2026, June 15–19). Small vs. large language models: Comparing language models in generating productive failure math problems [Paper presentation]. *International Society of the Learning Sciences Annual Meeting (ISLS)*, Irvine, CA, United States.
10. Rahimi, S., Li, H., Esmaeiligoujar, S., & **Ercan, D.** (2026, June 15–19). Rubric-guided generative AI for scalable creativity assessment in educational games [Poster presentation]. *International Society of the Learning Sciences Annual Meeting (ISLS)*, Irvine, CA, United States.
11. Gao, R., Kao, Y. C., Ma, C., Zheng, Y., **Ercan, D.**, Esmaeiligoujar, S., & Huang, R. (2025, December). GeoQuest: Prototyping a mobile game for geography learning with game-based and design thinking approaches [Poster presentation]. *Joint Conference on Serious Games (JCSG)*, Rotkreuz, Switzerland.
12. Rahimi, S., **Ercan, D.**, Gao, R., Esmaeiligoujar, S., Babae, M., Li, H., Zhang, S., Lee, S., Closser, A., & Botelho, A. F. (2025, July). ProductiveMath: A generative-AI-powered app to support productive failure teaching [Poster presentation]. *26th International Conference on Artificial Intelligence in Education (AIED 2025)*, Palermo, Italy. (Acceptance rate: <16%; **Nominated for Best Poster Award**)
13. **Ercan, D.**, Esmaeiligoujar, S., & Rahimi, S. (2025, June). Improving Pre-K–12 students' executive functions using digital games: A systematic review [Paper presentation]. *International Society of the Learning Sciences Annual Meeting (ISLS 2025)*, Helsinki, Finland.
14. Rahimi, S., Esmaeiligoujar, S., Gao, R., **Ercan, D.**, & Keawphonkrang, S. (2025, June). The effects of digital games on Pre-K–12 students' growth mindset: A systematic review [Paper presentation]. *International Society of the Learning Sciences Annual Meeting (ISLS 2025)*, Helsinki, Finland.

Conference Presentations & Posters

15. **Ercan, D.**, & Rahimi, S. (2026, April 2). *Mapping the role of generative AI in STEM learning games: A systematic scoping review* [Roundtable presentation]. University of Florida College of Education Research Symposium, Gainesville, FL, United States.
16. **Ercan, D.**, & Rahimi, S. (2026, April 7). *Mapping the role of generative AI in STEM learning games: A systematic scoping review* [Poster presentation]. University of Florida Graduate Student Research Day, Gainesville, FL, United States.
17. **Ercan, D.**, Esmaeiligoujar, S., & Gao, R. (2026, March 26–27). *The Grand Glitch Hotel: Designing and Prototyping a Digital Learning Game for Artificial Intelligence Literacy* [Roundtable presentation]. National AI Literacy Day, University of Florida, Gainesville, FL, United States.
18. Rahimi, S., Babae, M., Esmaeiligoujar, S., **Ercan, D.**, & Gao, R. (2026, April). *Supporting future-ready math classrooms with ProductiveMath: A web-based, human-in-the-loop generative AI tool* [Roundtable presentation]. American Educational Research Association (AERA) Annual Meeting 2026, Los Angeles, CA, USA.
19. Rahimi, S., Babae, M., Esmaeiligoujar, S., **Ercan, D.**, Gao, R. (2026, June 15–19). *ProductiveMath: A research-driven, AI-powered platform for teacher-generated productive failure problems* [Demonstration]. International Society of the Learning Sciences Annual Meeting (ISLS 2026), Irvine, CA, United States.
20. Rahimi, S., Esmaeiligoujar, S., **Ercan, D.**, Gao, R., & Babae, M. (2025, November). *Small vs. Large Language Models: Comparing Language Models in Generating Productive Failure Math Problems* [Paper presentation]. 9th Annual Meeting of the Florida Educational Research Association (FERA), Fort Myers, FL, United States.
21. Rahimi, S., Esmaeiligoujar, S., **Ercan, D.**, Babae, M., & Gao, R. (2025, November). *ProductiveMath: A Human-in-the-Loop AI Web-based Application to Support Teachers When in Productive Failure Teaching in Algebra* [Paper presentation]. 9th Annual Meeting of the Florida Educational Research Association (FERA), Fort Myers, FL, United States.
22. **Ercan, D.**, Rahimi, S., Esmaeiligoujar, S., Babae, M., & Gao, R. (2025, November). *Designing an AI-powered platform to support teachers in creating algebra problems for productive failure teaching in K–12 classes* [Poster presentation]. 9th Annual Meeting of the Florida Educational Research Association (FERA), Fort Myers, FL, United States. **Best Graduate Student Poster Award.**

23. Smaeiligoujar, S., Rahimi, S., **Ercan, D.**, Babae, M., & Gao, R. (2025, November). *Exploring Novel Research Trends in Graduate Student Posters* [Poster presentation]. 9th Annual Meeting of the Florida Educational Research Association (FERA), Fort Myers, FL, United States.
24. Babae, M., Rahimi, S., **Ercan, D.**, Smaeiligoujar, S., & Gao, R. (2025, November). *Designing a Professional Development Workshop on Productive Failure For Math Teachers Based on Learning Experience Design Method* [Poster presentation]. 9th Annual Meeting of the Florida Educational Research Association (FERA), Fort Myers, FL, United States.
25. Rahimi, S., Smaeiligoujar, S., Gao, R., **Celik, D.**, Li, H., & Botelho, A. F. (2025, April). *Supporting teachers to prepare for productive failure using an AI-powered algebra problem generator* [Poster presentation]. American Educational Research Association (AERA) Annual Meeting 2025, Denver, CO, USA.
26. Rahimi, S., **Celik, D.**, Gao, R., Smaeiligoujar, S., Li, H., & Botelho, A. F. (2025, April). *Using generative AI for automated human-creativity assessment and machine creativity in a sandbox game* [Paper presentation]. American Educational Research Association (AERA) Annual Meeting 2025, Denver, CO, USA.
27. **Ercan, D.**, Rahimi, S., Smaeiligoujar, S., Babae, M., & Gao, R. (2025, April). *Designing and prototyping an AI-powered web-based platform to support teachers in the productive failure method* [Poster presentation]. University of Florida Graduate Student Research Day, Gainesville, FL, United States.
28. Smaeiligoujar, S., Rahimi, S., Gao, R., **Ercan, D.**, & Babae, M. (2025, April). *Towards better failure: Developing a rubric for algebra problem design* [Poster presentation]. University of Florida Graduate Student Research Day, Gainesville, FL, United States.
29. Babae, M., Rahimi, S., **Ercan, D.**, Smaeiligoujar, S., & Gao, R. (2025, April). *From struggle to success: A professional development on productive failure for math educators* [Poster presentation]. University of Florida Graduate Student Research Day, Gainesville, FL, United States.
30. **Ercan, D.**, Rahimi, S., Smaeiligoujar, S., Babae, M., & Gao, R. (2025, March). *Fail forward: Designing a platform to support productive failure in the classroom* [Paper presentation]. University of Florida College of Education Research Symposium, Gainesville, FL, United States.
31. Smaeiligoujar, S., Rahimi, S., Gao, R., **Ercan, D.**, & Babae, M. (2025, March). *Designing a rubric for assessing productive failure problems in algebra* [Paper presentation]. University of Florida College of Education Research Symposium, Gainesville, FL, United States.
32. Babae, M., Rahimi, S., **Ercan, D.**, & Smaeiligoujar, S. (2025, March). *From Struggle to Success: A Professional Development on Productive Failure For Math Educators* [Paper presentation]. University of Florida College of Education Research Symposium, Gainesville, FL, United States.
33. Rahimi, S., Li, H., **Celik, D.**, Smaeiligoujar, S., Gao, R., & Botelho, A. F. (2025, March). *An Automated Human-Creativity Assessment and Machine Creativity in a Sandbox Game Using Generative AI* [Paper presentation]. Society for Psychology of Aesthetics, Creativity, and the Arts Annual Conference (APA Division 10), New Haven, CT, USA.
34. DeLeon, J., Dunn, I., & **Celik, D.** (2024). *Gamify to Amplify: Boosting Anatomy Mastery with Flashcards for Graduate Students* [Poster presentation]. University of Florida College of Medicine Celebration of Research Day, Gainesville, FL.
35. DeLeon, J., Dunn, I., & **Celik, D.** (2024). *Gamify to Amplify: Boosting Anatomy Mastery with Flashcards for Graduate Students* [Poster presentation]. Regional AAA Conference, Birmingham, AL.
36. DeLeon, J., Dunn, I., & **Celik, D.** (2024). *Gamify to Amplify: Boosting Anatomy Mastery with Flashcards for Graduate Students* [Paper presentation]. Association for Educational Communications and Technology (AECT), Kansas City, MO.
37. **Ercan, D.**, Ozdemir, H., Kaya, A., Köseoglu, B., Turk, E., Zabzun, G., Ilgun-Cerci, S., Durak, T., & Sarsar, F. (2022). The Engineering Education Research Trends in Turkey: A content analysis of the Covid Pandemic in March 2020–December 2021. In *Proceedings of the 4th International Instructional Technologies in Engineering Education Symposium*, Izmir, Turkey.

Invited Talks

1. **Ercan, D.** (2026, September 26). *Connecting the Dots: My Research Journey in Educational Technology*. LEAP Group, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States.

Research and Professional Experience

Alachua County Public Schools Professional Development Grant Jun 2026 – Present
Grant-funded project, University of Florida E-learning, Technology and Communications (ETC)

Instructional Designer

Supervisor: Macy Geiger, Ed.D.

Director: Domenic Durante

- Design asynchronous professional learning microcourses for K–12 teachers and school administrators across Florida.
- Develop online learning experiences and instructional materials in Articulate Rise and Storyline.
- Partner with professors and subject matter experts to develop professional learning on autism spectrum disorder (ASD), multilingual learners (ELL), and co-teaching practices.
- Apply instructional design, accessibility, and adult learning principles to create engaging, scalable online professional development.

Gates Foundation - PRODUCTIVE: AI-Powered Math Problem Generator for Supporting Teachers in Productive Failure Implementation

Jan 2024 – May 2026

(Gates Foundation Award 080555)

Research Assistant | Bill & Melinda Gates Foundation Grant: \$451,563

Principal Investigator: Dr. Seyedahmad Rahimi

- Contributed to the design and prototyping of an AI-powered math problem generator to support teacher preparation in implementing the productive failure teaching method.
- Developed wireframes and interactive prototypes in Figma, ensuring alignment with instructional goals and user-centered design principles.
- Collaborated with teachers to translate cognitive and pedagogical requirements into accessible, intuitive user interfaces.
- Conducted iterative user testing and design evaluations with K–12 educators to refine workflows and interface usability.

A Unique Blended Curriculum to Enhance the Research Capacity of Undergraduate and Graduate Students
2022–2023

(SOA-2021-22770, Multidisciplinary Priority Area Research Project)

Supported by Ege University Scientific Research Projects Coordination *Research Assistant*

Principal Investigator: Dr. Ozge Altun

- Contributed to the development of a blended learning curriculum aimed at enhancing research skills among undergraduate and graduate students.
- Supported instructional design, learning material development, and digital learning integration aligned with project goals.
- Collaborated with faculty to align curriculum content with academic standards and research methodologies.

Mobile Game Development About Electrical Energies and Recycling

2019 – 2021

(TUBITAK 2209-A Research Project Support Programme Award for Undergraduate Students)

- Designed and developed an educational mobile game to teach concepts of electrical energy conversion and recycling.
- Applied game-based learning principles to enhance engagement and understanding of environmental science topics.
- Led prototype design and testing process, integrating user feedback from student participants.

Funding, Fellowship and Other Research Awards

Best Graduate Student Poster Award, Florida Educational Research Association
(FERA)

Nov 2025

Graduate Student Council Travel Grant, University of Florida (\$400)

Oct 2025

School of Teaching and Learning Travel Award, University of Florida (\$250)

Best Graduate Student Paper Runner-up Award, College of Education Research Symposium, University of Florida (\$250)

March 2025

School of Teaching and Learning Travel Award, University of Florida (\$220)

Nov 2024

Selected Grant Development Experience

National Science Foundation (NSF) CAREER Award

2026

Total Award: \$1,665,900 | Proposal Contributor

Principal Investigator: Dr. Seyedahmad Rahimi

- Contributed to the literature review and synthesis supporting the proposal.
- Designed figures and visual representations communicating the project's research activities, educational activities, and five-year research plan.

Professional Service and Leadership

Vice President of SAGE (Student Alliance of Graduates in Education)

2025 Term

- Supported the president in team management by coordinating board activities, facilitating communication, and helping to organize academic, professional, and social programming for graduate students.
- Designed and managed social media campaigns and promotional materials (flyers, graphics) to increase engagement and visibility of SAGE events and initiatives across the College of Education.

GatorLead Graduate Leadership Program

Fall 2025 Term

University of Florida

- Selected as a GatorLead PhD student, participating in a semester-long leadership development program for graduate students and postdocs.
- Strengthened leadership capacity by engaging in weekly workshops, mentoring, and team-based discussions with accomplished leaders across career sectors.

Reviewer for Conferences

International Conference of the Learning Sciences (ICLS/ISLS)

Skills

Programming Languages: C#, Python, SQL, Java, HTML, CSS, R,

Tools: Unity, Figma, Framer, Articulate Storyline, Articulate Rise, Adobe Creative Suite (PS, AI, AN), LMS