Proceedings of the Learning Engineering Research Network Convening

From Insights to Implementation: Learning Engineering in Action

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The Learning Engineering Research Network (LERN) Convening is an ongoing conference dedicated to fostering top-quality research in Learning Engineering. The conference offers an interdisciplinary outlet for research in cognitive science, educational science, and design sciences, with a focus on developing effective learning ecosystems.

The 2026 convening, themed “From Insights to Implementation: Learning Engineering in Action,” brings together researchers, practitioners, and innovators to advance the interdisciplinary field of Learning Engineering. Building on work from cognitive science, education, design sciences, and beyond, the convening emphasizes translating research insights into practical solutions that strengthen learning ecosystems.

Hosted by the ASU Learning Engineering Institute, this collaborative event features keynotes, panels, and research presentations that showcase how data, technology, and design can drive innovation in education. From exploring generative AI to advancing inclusive practices, the LERN Convening highlights actionable approaches to addressing critical challenges and promoting equity in learning.

Held from February 3-4 in 2026, LERN2026 brought together over xxx educators, researchers, technologists, and learning professionals from public, private, and academic sectors. The LERN proceedings includes 70 examples of research within the learning engineering field from 95 submissions. These papers span from core papers on the Learning Engineering Process (LEP), human-centered evaluations within LEP, educational technology systems informed by the LEP, and the largest group, Artificial Intelligence in Education.

LERN2026 Awards

Of these submissions, we awarded two best paper awards. The awards were selected based on recommendations from reviewers and approval by our award committee.

2026 LERN Convening Best Paper Award

Human-Centered Learning Ecosystems: Reimagining Water Education for Real Estate Professionals
Danielle Storey, Poorva Ketkar, Emma Noble, & Harry Cooper
Coaching, Not Autocomplete: Early Evidence from ConnectInk's AI-Supported Personal Narrative Pilot
Julio Intriago-Izquierdo & Rahul Patel

Learning Engineering Research Network Distinguished Fellows (2026)

At this convening, we established our LERN Distinguished Fellows. The hard work and dedication of our three inaugural fellows have provided guidance and wisdom, and made the field of learning engineering what it is today, while setting it up to continue into the future. Our awardees this year are Sae Schatz, Jim Goodell, and Chris Dede.

Sae Schatz

Sae Schatz has been a key contributor to the evolution of learning engineering, especially through her work at the intersection of learning science, data-informed design, and advanced training technologies. As the former director of the Advanced Distributed Learning (ADL) Initiative for the U.S. Department of Defense, she helped shape modern learning ecosystems—championing interoperability standards, learner-centric design, and evidence-based approaches to large-scale training. Her leadership has pushed the field toward more adaptive, data-rich, and connected learning environments that embody the core principles of learning engineering.

Jim Goodell

Jim Goodell has been one of the central architects of learning engineering as a formal discipline, especially through his leadership in defining its frameworks, standards, and professional practices. As editor of Learning Engineering Toolkit and a longtime leader within the IEEE Learning Technology Standards Committee and ICICLE, he has advanced the field's focus on evidence-based design and continuous improvement. His work has helped establish learning engineering as a rigorous, systems-oriented approach to designing.

Chris Dede

Chris Dede has been one of the most influential voices shaping the modern field of learning engineering. A longtime Harvard professor and pioneer in learning technologies, he helped define learning engineering as the systematic use of data, design, and iterative experimentation to improve learning at scale. His work spans immersive learning (AR/VR), digital ecosystems, and large-scale research–practice partnerships, and he co-edited Learning Engineering for Online Education, a foundational text that formalized the discipline's methods and principles.

Convening Program and Review Committee

Ruben Acuña, Arizona State University, School of Computing and Augmented Intelligence

Tracy Arner, Learning Engineering Institute, Arizona State University

Christine M. Covas-Smith, Ph.D., Air Education and Training Command

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Md Biplob Hosen, University of Maryland Baltimore County

Tanya Churaman, University of Missouri-Columbia; Pearson Education

Linh Huynh, Learning Engineering Institute

Mina C. Johnson-Glenberg, Arizona State University

Heather C. Lum, Arizona State University

Mei Mei Li, Learning Engineering Institute, Arizona State University

Li (Lee) Liang, EvalMate.AI and Lee Vision

Janice Mak, Learning Engineering Institute, Arizona State University

Bryan Matlen, WestEd

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Abigail Stein, Carnegie Mellon University

Danielle Storey, Arizona State University, Arizona Water Innovation Initiative

Yu Tian, Learning Engineering Institute, Arizona State University

Vipin Verma, Learning Engineering Institute, Arizona State University

Dr. Wendy Walsh, SL, DAFC, Chief Learning Officer HQ Air Education & Training Command

Yiqiao Xu, MetLife, Inc.

LERN 2026 Presentations

Keynote Speaker
Sae Schatz, Ph.D.

CEO and Founder, the Knowledge Forge LLC

Thriving in the Age of Acceleration

We stand at a pivotal moment in the “Fourth Industrial Revolution,” our modern age, which isn’t simply defined by technological breakthroughs but also by the profound societal ripples they create. This keynote explores three defining characteristics reshaping how we work, live, and learn, and it provides a forward-looking framework for how Learning Engineering principles can help us build systems that match the pace of change.

About Sae

Sae works at the intersection of cognition, technology, and data. She formerly directed the Advanced Distributed Learning (ADL) Initiative, a government program for researching learning technologies, and before joining the civil service, Sae worked as an applied human–systems scientist in both business and academia, including as an assistant professor with the University of Central Florida’s Institute for Simulation and Training. Sae is a prolific writer and professional presenter; for example, she recently released Engines of Engagement: A Curious Book About Generative AI (2023) and contributed to the National Academies report on Adult Learning in the Military Context (2024).

Learning Engineering Research Network Convening Schedule

Welcome, Awards & Panel	Taking Human-Centered Learning Innovation to Scale	Moderator: Danielle McNamara, Executive Director of the ASU Learning Engineering Institute Panel members Steve Ritter, Founder and Chief Scientist of Carnegie Learning Alyssa Friend Wise, Professor of Technology and Education at Vanderbilt University and Director of the LIVE Learning Innovation Incubator Cristina Heffernan, Co-Executive Director and Co-Founder of The ASSISTments Foundation Ben Motz, Assistant Professor at Indiana University Bloomington
Best Paper		
	Human-Centered Learning Ecosystems: Reimagining Water Education for Real Estate Professionals	Danielle Storey
	Coaching, Not Autocomplete: Early Evidence from ConnectInk's AI-Supported Personal Narrative Pilot	Julio Intriago-Izquierdo
Designing AI for K–12		
	Agentic PAL: Designing Human-Empowered AI Partnerships for Early Childhood Mathematics Learning	Anastasia Betts
	Multiple-Document Comprehension in High School Science: A Learning-Engineering Pilot Study	Andrew Potter
	Socio-Emotional Learning in AI K-12 Guidance and Policy Documents: A Gap Analysis	Emmanuel Adeloju
Applications of Learning Engineering		
	Teacher Education through Learning Engineering: An Action Research on Faculty Transformation	Kürşat Çağıltay

	eBuku: AI-Driven Mentorless Learning for STEM Education in Humanitarian Contexts of the DRC	Narcisse Mbunzama
	The Writing Analytics Tool: A Learning Engineering Approach to Designing AI-Supported Writing Instruction	Danielle McNamara & Andrew Potter
AI In Science and Education		
	Comparing Epistemic Emotions and User Experience Across Two AI Instructional Designs in Biology Learning	Yiwen Li
	REAL CHEM Action Research Through the LearnLab Summer School	Bryan Henderson
	Designing for Student Engagement with AI in Courseware: Lessons from Iterative Improvements to DOT in REAL CHEM	Kimberly Larson
Learning Engineering and Learning Technology 1		
	From Course Concept to Lecture Video: An AI-Powered System for Automated MOOC Development	Hua Wei
	MIRANDA: Real-Time Learning Analytics for Authentic Embedded Assessment	Elina Ollila
	The Impact on Cognition and Motivation Using Gaming, Simulation, and Visual Learning in Military Flight Training	Ariah Elmore
Debate	From Insights to Implementation: Learning Engineering in Action	Moderator: Tracy Arner, Associate Director of the Learning Engineering Institute Debate Participants Nia Nixon, Associate Professor in School of Education at the University of California, Irvine Stephen Fancsali, Vice President of Data Science at Carnegie Learning Kathryn McCarthy, Associate Professor of Educational Psychology at Georgia State University

		René Kizilcec, Associate Professor of Information Science at Cornell University
Learning Engineering Distinguished Fellows		
	What Works When for Whom Under What Conditions: Learning Engineering as an Enabler of Component-based Research	Chris Dede
	Learning Engineering Body of Knowledge	Jim Goodell
Education, Validity, & AI		
	The Education Tree: A New Theoretical Model for P-20 Education and Development	Maxwell Goshert
	Implementing Concept Instruction via MCP Server	Thor A. Anderson
	NLP Validation of Prompt Strategies for Theory-Aligned LLM-Generated Personalization	Linh Huynh
Learning Engineering and Learning Technology 2		
	“Walk It Out”: An Embodied and Mobile AI Tutor for STEM Education	Mina Johnson-Glenberg
	A Tiered Framework for Educational Event Data Documentation: Synthesizing Principles and Addressing Gaps	Xin Wei
	Learning Engineering by Design: An Agentic AI Application for Rapid, Personalized Health & Safety Training in Disaster Response and Hazardous Environments	Henry Ryng
AI & Pedagogy		
	ReQUESTA: A Hybrid Agentic Framework for Generating Cognitively Diverse Multiple-Choice Questions	Yu Tian
	Towards Automated Detection of Struggling Student Programmers	Sanjita Patwardhan
	The Promise of Scenario-Based Assessments for College Instruction	Jonathan Cohen

Human Centered Applications with Learning Engineering		
	User experience design of AI-assisted human-technology ecosystem for writing assessment	Li (Lee) Liang
	A Learning Engineering Approach to Transforming Teacher Practice Through Co-Designing Science Curricular for Multilingual Learners	Yernat Mnuar, Jie Zhang, Iftekharul Chowdhury
	Currents of Inquiry: Insights From Two Years of Real-World AI-Learner Water Conversations	Stephen Carradini

Poster Session

Poster Title	Presenter
Adaptive Multi-Modal Deepfake Detection for Safer Learning Environments	Syeda Samira Sama
An Application of Design-Based Implementation Research to Develop a Framework to Support a Community of AI-experience Creators	Janice Mak
Automated Run-on Sentence Detection and Correction for Educational Writing	Shubham Chakraborty
Automatic Identification and Evaluation of Revisions in Student Writing Using Large Language Models	Yu Tian
Automatically Generating Interactive Learning Experience With an LLM-driven Agentic Pipeline	Felix Gröner
Charm-bots: The Impact of A.I.'s Flattering Language on User Trust	Heather C. Lum
Engineering a Semantic Topicality Instrument for Multiple-Choice Question Quality Control	Michelle Banawan
From Measurement to Action: A Learning Engineering Approach to AI-Powered Assessment for Human Power Skills Development	Yigal Rosen
Integrating AI into Data Sensemaking: Teachers' Learning and Pedagogical Reflections	Emmanuel Adeloju
L2-French Learners and Generative AI (GenAI): Challenges, Needs, and Design Guidelines	Jiachen Gong
Learning-By-Explaining with Generative AI: A Pilot Implementation in Introductory Biology	Kathryn S. McCarthy
Leveraging Agentic AI for Human-Centered XR Learning Content Standards	Myranda Pina

LLM Safety in an Educational Context: A holistic approach	Bernice Yeo
Media Mentor AI: How a SCAMPER-guided AI assistant is helping reimagine media literacy learning	Karina Luna
Optimizing Language-Focused Writing Feedback from Large Language Models through Prompt Engineering	Yu Tian
QA Automation of Canvas Courses	Natalia Echeverry
Quality Assessment Through Learning Engineering: An Evaluation Rubric of LLM-Generated Multiple-Choice Questions	Katerina Christhilf
Reasoning LLMs are Competent Courseware Reviewers	Ryan Dwyer
Social and Emotional Dimensions of Generative AI Use	Rebekah Jongewaard
The Difficult Conversations Bot: Findings on Fostering Empathy and Reflective Communication Among Faculty and Staff	Catheryn Reardon
The Writing Analytics Tool: A Learning Engineering Approach to Designing AI-Supported Writing Instruction	Danielle McNamara
Epistemic Cognition and Uncertainty Navigation with a Domain-Specific AI Chatbot in STEM Education	Yiwen Li
Vibe Coding: How Junior and Senior Developers Use GenAI’s Newest Tool	Selena Evans
A Learning Strategy Analysis for Guiding the Creation of a Team Training Immersive Reality Environment	Robert F. Siegle
Advancing Usability of a VR Team Training Environment within a Learning-Engineering Cycle	Parkhi Malhotra
Co-Designing a Study Platform for ASU Graduate Students to Enhance Learning Productivity and Performance Through Connection	Fiodesy Gemilang Putri
Co-Designing AI-Enabled Learning in Nursing Education: A Learning Engineering Approach Using Faculty and Student Insights	Mamta Shah
Design and Pilot Evaluation of a Gamified Narrative Chatbot for STEM Education	maria goldshtein
Developing Learning Strategy Heuristics for Active Mobile Learning Platforms	Ishrat Ahmed
How Students Really Use Courseware: Visualizing Student Pathways in Integrated Chemistry Courseware	David J. Yaron
Understanding Instructor Perspectives and Course Challenges in FSE 100: A Learning Engineering Approach to Improving the Course	Whitney Hansberry

Case Study: Learning Economy Foundation Competency Graph	Jim Goodell
IEEE Standards for Scaled Learning Engineering	Jim Goodell
Open Repository for AI Models as Learning Engineering Components	Jim Goodell
Bridging Human Intelligence Augmentation (IA) and Classroom Practices via GenAI in Learning Engineering	Li (Lee) Liang
A Predictive Learning Engineering Framework for Modeling Active Learning	Michelle Banawan
CoreTrust as a Civic Learning Tool: Community Capital for Inclusive Digital Governance	Mark Roseland
Design and Development of Two Digital Solutions for Promoting Harmonious Relationships: Buddy Up and Squeez	Kimberly R. M. Osborne
EdLight Research Portal: An Expert-Annotated Repository of Handwritten Math Student Work	Michel Meneses
From Immersion to Action: How VR Influences Behavioral Intentions Around Advanced Water Purification	Ketevan Chachkhiani
Terracotta: Lowering Barriers to Experimental Education Research	Benjamin Motz
Developing a Model to Support Collaborative Engineering Projects	Yu Ye
Impact of Varying the Playback Speeds of Educational Content on Learning and Engagement	Tyree Cowell
NSF: IGE: Transforming Master's-Level Engineering Education through Industry Partnerships, Principled Engineering, and Experiential Learning	Samantha Brunhaver
SCALED: A Transferable Learning-Engineering Model for Large-enrollment STEM Courses	Medha Dalal
Scaling Interleaved Mathematics Practice	Bryan Matlen
Curiosity Games: Project Mars: An AI-Supported Education Recommendation System	Caila DeAbreu

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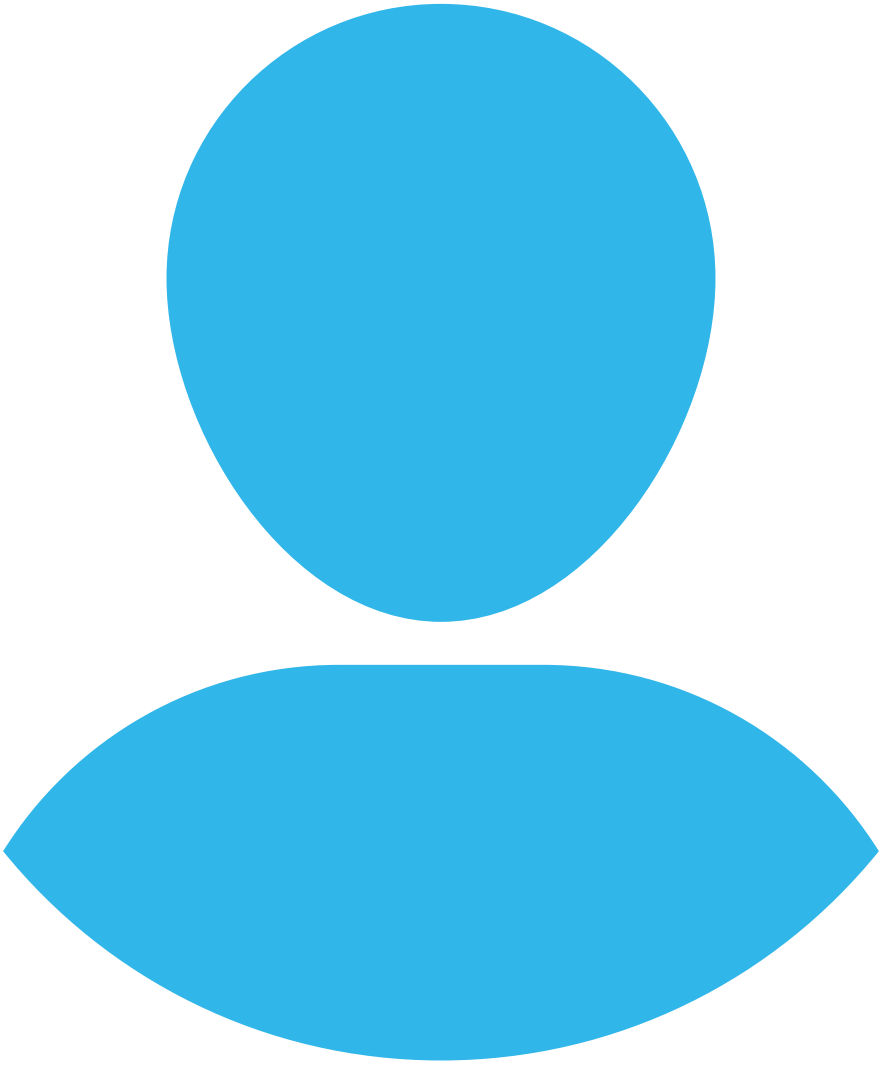

Scotty D. Craig
Arizona State University

Scotty D. Craig is an associate professor of human systems engineering within The Polytechnic School of the Ira A. Fulton Schools of Engineering at Arizona State University. Dr. Craig serves as the ASU Learning Engineering Institute's Director, Research and Evaluation and as Director of the ASU Advanced Distributed Learning Initiative Partnership Lab. Dr. Craig is a learning engineer with expertise in cognitive science, design science, and the science of learning (specifically learning technology).

He has contributions at the intersection of psychology, education, and technology within the areas of multimedia learning, virtual environments, as well as development and evaluation of learning technology within laboratory and applied settings. Dr. Craig is currently the graduate chair for four areas: Human Systems Engineering Program (MS & PhD), User Experience (MS), Data Science and Analytics in Engineering- Human-Centered Applications (MS) and the new Graduate Certificate for Learning Engineering.