ICOLSEI 2025

The 1st International Conference on Learning Sciences and Educational Innovation

2025. 6. 5. (Thu)

Hoam Faculty House, Samsung Convention Center, Seoul National University

THEME

The Learning Nexus: AI, Neuroscience, and Education

HOST

Learning Sciences Research Institute, Seoul National Unviersity

Institute of Knowledge Integration & Design, Dankook Universtiy

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Greetings

The rapid advancement of AI, neuroscience, and digital technologies has revolutionized our ability to scientifically understand learning and its underlying mechanisms. These breakthroughs enable us to study how the brain processes information, how knowledge is constructed, and how people learn in a community. This scientific understanding of learning is simultaneously accelerating a paradigm shift in education, as traditional approaches are being transformed through evidence-based practices informed by learning sciences and artificial intelligence.

In response to this transformative moment, the first International Conference on Learning Sciences and Educational Innovation (ICOLSEI) brings together leading experts from around the world to foster meaningful dialogue between international and domestic researchers. By uniting scholars from AI, neuroscience and education, this conference aims to catalyze the formation and development of a vibrant academic community dedicated to advancing our scientific understanding of learning mechanisms and driving educational innovation.

ICOLSEI 2025 serves as more than an academic meeting—it is designed to establish lasting networks, share groundbreaking research, and collectively shape the future of learning sciences as a field that bridges scientific discovery with educational transformation.

Best regards,
Young Hoan Cho
Hunkoog Jho

Conference Co-Chair

Young Hoan Cho

Director, Learning Sciences Research Institute
Professor, Seoul National University

Hunkoog Jho

Director, Institute of Knowledge Integration & Design
Professor, Dankook University

Keynote Speakers

Kimberley Gomez

Professor, School of Education & Information Studies, University of California, Los Angeles

Collaborative Design: Its Roots and Practices in the Learning Sciences

David Wei Loong Hung

Center Director of Science of Learning in Education, Nanyang Technological University

Bridging Minds and Machines: Integrating AI, Neuroscience, and Education for Transformative Learning

Minkang Kim

Associate Professor, The University of Sydney

Towards a Defensible Science of Learning and Teaching in Education: Beyond the Chaos of Education Theory

Invited Speakers

Kenneth Yang Teck Lim

Senior Research Scientist, National Institute of Education, Nanyang Technological University

In Situ Physiological Responses When Interacting with Large Language Models: A Neuroergonomic Perspective

Wei Lou

Associate Professor, Deakin University

Training Strategies in Deep Learning: Implications for Bias, Safety, and Human Learning

Dongjae Kim

Assistant Professor, Dankook University

Mathematical Foundations of Learning in the Brain: Reinforcement Learning to Minimize Errors and to Maximize Information

Program Schedule

09:00 - 09:10	**Opening Ceremony**		2F Mugunghwa hall (무궁화)
09:10 - 10:00	**[Keynote 1] Collaborative Design: Its Roots and Practices in the Learning Sciences** (Kimberley Gomez)		2F Mugunghwa hall (무궁화)
10:00 - 10:10	Break		
10:10 - 11:00	**[Keynote 2] Bridging Minds and Machines: Integrating AI, Neuroscience, and Education for Transformative Learning** (David Wei Loong Hung)		2F Mugunghwa hall (무궁화)
11:00 - 11:50	**[Keynote 3] Towards a Defensible Science of Learning and Teaching in Education: Beyond the Chaos of Education Theory** (Minkang Kim)		
11:50 - 13:00	Lunch		Main building B1
13:00 - 13:50	**Poster Session**		1F Hallway
	2F Mugunghwa hall (무궁화)	1F Magnolia hall (목련)	1F Water Lily hall (수련)
14:00 - 15:20 (80 mins)	Session 1 **From Physiological Insights to Educational Innovation** • In Situ Physiological Responses When Interacting with Large Language Models: A Neuroergonomic Perspective *Kenneth Lim* • Enhancing AI Literacy Through Parent-Child Collaborations on Maker-Based STEM Learning in Public Libraries *Yong Ju Jung & Jiqun Liu* • A Case Study on AI-based STEM Instruction Model Using Robot-based Physical Computing Devices *Eunseo Lee & Cheol-il Lim*	Session 2 **Dynamics of EdTech Ecosystem in Public Education** • The Discursive Construction of the Education Ecosystem in South Korea's AI Digital Textbook Policy *In Chull Jang, Siwon Sung, & Borimna Lee* • Tensions and Contradictions in South Korea's EdTech Ecosystem for Public School: Focusing on the Perspective of EdTech Companies *Chanhui Kim, Jiyong Park, & Young Hoan Cho* • Building Sustainable EdTech: Governance Challenges in Korea's Regional Online Learning Platforms *Heewon Moon, Young Sun Choo, Young Hoan Cho* • The Potentiality of Learning Experience Platforms: Focused on Adaptive Functions in a Lifelong Learning Environment *Mingyeong Kwon & Keol Lim*	Session 3 **Language Learning & Multilingual Education** • Exploring the Potential of Generative AI for Automated English Writing Assessment *Myunghwa Jin, Youjin Jung, Dahye Lee, & Kyu Yon Lim* • Fictional Narrative Production by Chinese Learners of Korean: Focusing on Complexity, Accuracy, and Fluency in Language *Sohyeon An & Hojung Kim* • Implementing CLIL in an Extensive Reading Course: Insights from a Korean for Academic Purposes Program *Soyeon Min & Minsun Kim*
15:20 - 15:30	Break		
15:30 - 16:50 (80 mins)	Session 4 **Transforming Education through AI & Leadership** • Adapting AI-Driven Coding Platforms Across K–12: A Mixed-Methods Study of Pedagogical Integration and Learner Engagement *Eunsang Eom, Jongkook Kim, & Eunseo Lee* • Leveraging AI tools in Teacher Education: Bridging Theory and Practice *Jesse Ha, Da Hei Ku, Seongryeong Yu, Hanall Sung, Koeun Park, Yehyang Lee, Jieun Lee, Sungeun Kang, & Hee Jung Gong* • Exploring Interactions and Intra-Actions of Learners in Korean EFL Textbooks *Sejin Lee & Kyungmee Lee*	Session 5 **Eye-tracking Studies in Second Language Learning** • Undergraduate L2 Learners' Engagement With ChatGPT Feedback: Insights From Stimulated Recall With Web-Based Eye-Trackers *Hyebin Seo, Jina Son, & Sun-Young Oh* • Developing and Applying SNUWET: Webcam-Based Eye-Tracking for Qualitative Research and Training *In Chull Jang, Siwon Sung, Hyerin Ryu, Juno Hwang* • An Eye-Tracking Study on the Effects of Clause Type and Noun Animacy on Korean Adult L2 Learners' Processing of English Relative Clauses *Injin Byeon & Kitaek Kim*	Session 6 **Human-AI Collaboration in Education** • Analyzing Teacher-AI Interaction Patterns in Student-Centered Lesson Design *Seoyeon Choi, Seulgi Jung, Sojung Park, Yeongje Kim, & Insook Han* • Developing Ethical and Emotionally Aware Digital Learners: A Project-Based SEL and AI Literacy Program *Yeeun Lee & Jeongmin Lee* • Meeting the Collective Creativity in Human-AI Collaboration *Sohee An* • Investigating Prompt Progression Patterns with Generative AI for Enhanced Problem Solving *Jongpil Cheon & Sangno Lee*
16:50 - 17:00	Break		
17:00 - 18:00 (60 mins)	Session 7 **Bridging Deep Learning & Brain-Based Learning** • Training Strategies in Deep Learning: Implications for Bias, Safety, and Human Learning *Wei Luo* • Mathematical Foundations of Learning in the Brain: Reinforcement Learning to Minimize Errors and to Maximize Information *Dongjae Kim*	Session 8 **Neuroscience-Informed Approaches to Learning and Teaching** • Comparing the Effect of External and Internal Motor Imagery on Reducing Anxiety in Sports *Jieun Lee, Sangyun Kim, & Hyo Youl Moon* • Can Eye Movements Measure Cognitive Load in Educational Research? Insights from Current Literature *Ji Won Yang & Jihyun Lee*	Session 9 **Bubblecon Special Session** BUBBLECON your own content
18:00 - 18:10	Break		
18:10 - 18:30	**Closing Ceremony**		2F Mugunghwa hall (무궁화)

Poster session

No.	Title	Speakers
1	Action Indices to Measure Learner-AI Collaboration	Bookyung Shin, Hyeeun Kim, Yewon Han, Yeono Son, Anna Kim, Yong Hoan Cho
2	AI in Education Is Not a Silver Bullet: A Classroom Comparison	Hyejeong Lee
3	Brain Activation and the Adoption of Cognitive Training Digital Therapeutics: Evidence from fNIRS	Soowon Park, Yeeun Byeon, Jung-In Lim, Hyeonjin Kim, Jun-Young Lee
4	Can Monitoring Nature Teach Science? A Systematic Review of Community-Based Monitoring in Schools	Ho Yeong Yu, Seongjae Lee, Jae Geun Kim
5	Challenges of Integrating ChatGPT into EFL Writing: An Activity Theory Framework	Jiyoon Jung, Sewon Joo, Heeyoon Park, Insook Han
6	Comparing AI and Search Engines in Academic Writing: Impacts on Metacognition and Learning Flow	Junseo Kim, Chaeeun Lee
7	Constructed Paragraph Jigsaw Puzzle Items for Measuring Structure Building Ability	Hwimin Kim, Jooyong Park
8	Development of a Thought Support System Using Large Language Models for “Period for Inquiry-Based Learning” in Japan: Prospects for Research on Accidental Questioning	Masaki Kumekawa, Tomohiro Ishida, Nozomu Kutomi, Mamoru Onuki, Kohei Tanaka, Terumasa Ishii, Kayo Matsushita
9	Evaluating Others versus Being Evaluated: Which One Enhances Learning More?	Min Hae Song, Jooyong Park
10	Evaluation of the Efficiency of Chemistry Ⅰ Courses Utilizing Generative AI	Hyun Woo Oh, Hyun Kyung Kim
11	Expert-Driven Ontology Development for AI-Based Personalized Science Learning: A Case Study in Middle School Curriculum Design.	Mihyun Son
12	Exploring How Learner Variables Influence GPT Interaction Types in English Reading: Analysis based on ICAP framework	YeSeong Kim, MinSun Cho, SeunMin Eun
13	From 4E Cognition to Ensemble Cognition: Rethinking Human-AI Learning through Dynamic Cognitive Orchestration	Hunkoog Jho, Chulkyu Park
14	How Do Novice and Experienced Teachers Differ in AI Interaction during Learner-Centered Lesson Planning?: Ordered Network Analysis	Yeongje Kim, Seoyeon Choi, Seulgi Jung, Insook Han
15	Identifying Objective Difficulty Indicators Based on EEG and fNIRS Analysis Techniques via Language Tasks	Junwoo Kim, Sangyoon Kim, Jae Yeon Park, Hyoyoul Moon
16	Improving University Students’ Core Competencies through Lecture-Integrated Discussions	JungYeon Park
17	Perception and effectiveness analysis of the ALEKS program	Si Yeon Min, Hyun Kyung Kim
18	Resting-State EEG as a Predictor of Individual Differences in Motor Development in Children : Pilot Study	Sangyun Kim, Jae Yeon Park, Young Hoan Cho, Hyo Youl Moon
19	Simulacra Model: Challenging Students to Surprise AI with Deleuze’s Philosophy	Cha Jin Seok
20	The Role of Self-Study in Enhancing Collaborative Learning	Jaeseo Lim, Min Hae Song
21	Understanding Learner Behavior in MOOCs: Analysis of Learning Patterns and Academic Achievement	EunSang Eun, JongKook Kim, EunSeo Lee

Hoam Faculty House Map

Main Building		
B1	Crystal Restaurant	
Samsung Convention Center		
1F	Magnolia	[Session 2] Dynamics of EdTech Ecosystem in Public Education [Session 5] Eye-tracking Studies in Second Language Learning [Session 8] Neuroscience-Informed Approaches to Learning and Teaching
	Water Lily	[Session 3] Language Learning & Multilingual Education [Session 6] Human-AI Collaboration in Education [Session 9] Bubblecon Special Session
2F	Mugunghwa	[Opening Ceremony] [Keynote Speeches] [Sesison 1] From Physiological Insights to Educational Innovation [Session 4] Transforming Education through AI & Leadership [Session 7] Bridging Deep Learning & Brain-Based Learning [Closing Ceremony]