EDEN Annual Conference Proceedings

Beyond Technology: Human-AI Collaboration for Learning and Teaching

EDEN 2026 Annual Conference

hosted by

University of Porto, Porto, Portugal

14-16 June 2026

Edited by

Elena Trepulė

on behalf of EDEN Digital Learning Europe

EDEN Annual Conference Proceedings

2026 Annual Conference | Porto, 14-16 June 2026

ISSN: 2707-2819

Published by EDEN Digital Learning Europe

Editor:

Elena Trepulė

Editorial co-ordination:

Gabija Morozovienė

EDEN DLE Secretariat

Kuklase tn 16-12, 13423, Tallinn, Estonia

E-mail: secretariat@eden-europe.eu

https://eden-europe.eu/



Co-funded by
the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Copyright Notice 2025 EDEN Digital Learning Europe and the Authors

This publication contributes to the Open Access movement by offering free access to its articles and permitting any users to read, download, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software. The copyright is shared by authors and EDEN DLE to control over the integrity of their work and the right to be properly acknowledged and cited.

To view a copy of this license, visit http://www.creativecommons.org/licenses/by/4.0

Acknowledgement and thanks are given to the Conference Scientific Committee:

Wim E.A. Van Petegem, EDEN DLE President; KU Leuven, Belgium

Alfredo Soeiro, EDEN DLE Management Board; University of Porto, Portugal

Amelia Veiga, University of Porto, Portugal

Albert Sangra, EDEN DLE Vice-president for Strategic Thinking and Networking; Universitat Oberta de Catalunya, Spain

Antonella Poce, EDEN DLE Chair of PhD Community; University of Modena and Reggio Emilia, Italy

Denise Whitelock, EDEN DLE Vice-President for Research; Open University, UK

Elena Trepule, EDEN DLE Secretary General; Vytautas Magnus University, Lithuania

Estela Dauksiene, EDEN DLE Management Board; Vytautas Magnus University, Lithuania

Josep M. Duart, EDEN DLE Management Board; Universitat Oberta de Catalunya, Spain

Mart Laanpere, EDEN DLE Management Board; Tallinn University, Estonia

Ronan Bree, EDEN DLE Management Board; Dundalk Institute of Technology, Ireland

Vlad Mihăescu, EDEN DLE Vice-President for Membership and Communication; Politehnica University Timisoara, Romania

Janika Leoste, EDEN DLE Management Board; Tallinn University, Estonia

Table of Contents

CONCISE PAPERS iii
The human side of AI in education

AI-Supported Course-Level Quality Assurance in Higher Education: A Human-AI Comparative Microstudy 1
Jason Myrick, The American University in Cairo, Egypt

A Collaboration Framework for ESL and Mandarin Speaking Instruction, A Design-Based Study on AI-Assisted Pedagogy to Enhance Student Engagement and Performance 3
Alice Xiuxia Li, the University of Warwick, UK

Pedagogical Agency with Generative AI: An Open Practice in Teacher Education 6
Sara Builes, Francesc M. Esteve-Mon, Maria Ángeles Llopis Nebot, Anna Sánchez-Caballé, Jaume I University, Spain; Victoria I. Marín, University of Lleida, Spain

A Concise Review: Evaluating Staff and Student Perceptions on the use of AI at UCL Engineering 8
Irina Lazar, Mauryn Chika Nweke, University College London, UK

Unsettled: Global Perspectives on AI in Education 10
Luuk Terbeek, Vrije Universiteit Amsterdam, Netherlands

CADET: Expert–AI Dual Training for Teacher Assessment 13
Tzu-Chien Liu, National Taiwan Normal University, Taiwan

What does AI look like? Students draw the invisible 14
Judit Hahn, University of Jyväskylä, Finland

AI-Enhanced Digital Environment for Curriculum Renewal 16
Mojca Suban, Petra Dermota, The National Institute of Slovenia, Slovenia

Designing Group Work with AI for Human Skills, Belonging and Employability in Higher Education 18
Ksenia Wesolowska, University of Strathclyde, Glasgow, UK

Renewable assignments in times of AI 20
Inés Gil-Jaurena, Daniel Domínguez-Figaredo, Aitor López-González, Sergio López-Ronda, Universidad Nacional de Educación a Distancia (UNED), Spain

"It Must Know Everything": Exploring Secondary School Students' Imaginaries of AI-enhanced Learning 22
Georg Nöhrer, Patrick Koger, Elisabeth Anna Günther, University of Vienna, Austria

AI in Higher Education: Bridging Theory and Practice via Institutional Toolkits 24
Anna Sánchez-Caballé, Maria Ángeles Llopis Nebot, Sara Builes, Francesc Esteve-Mon, Universitat Jaume I, Spain

Beyond Adoption or Resistance: Teachers' Profiles of Generative AI Use 26
Meital Amzalag, Gila Kurtz, Holon Institute of Technology, Israel; Omri Hadar, Yifat Kolikant, The Hebrew University of Jerusalem, Israel; Yair Amichai-Hamburger, Reichman University, Israel

A Human-AI Collaboration Framework for Learning, Teaching and Academic Development in Higher Education 28
Mirjam Hauck, Mychelle Pryde, The Open University, UK

Before Technology: A Trust-Centred Postdigital Framework for Human–AI Pedagogy in Higher Education 30
Zeta Dooly, South East Technological University, Ireland; Daithi O'Murchu, Independent consultant, Ireland

Immersed and Connected: A Transatlantic Project on AI-Enabled Virtual Reality for Skills Development 32
Geraldine McDermott, Lorraine Daly, Catherine Carty, Technological University of the Shannon, Ireland; Ryan Mann, Jojo Hsu-O'Connor, Sarah Scott, South Alberta Institute of Technology, Canada

From Concept to Campus: Overcoming Real-World Barriers to Introducing a Social Robot for Student Support in Higher Education 34
Geraldine McDermott, Karol Fitzgerald, Geraldine Maughan, Technological University of the Shannon, Ireland

Designing sustainable AI literacy for teachers: A capacity-building approach 36
Mildrid Kyte, Western Norway University of Applied Sciences, Norway; Scarlet Coopman, d-teach, Belgium; Jon Øivind Hoem, Western Norway University of Applied Sciences, Norway; Katerina Todorova, Private Pädagogische Hochschule Augustinum, Austria; Erman Uzun,Mersin Üniversitesi, Turkey; Carl Boel, Katholieke Hogeschool Vives-Zuid, Belgium

The changing role of the teacher

Competence Without Enactment: Pedagogical Firewalls in AI Use 38
Maayan Shay Sayag, Ina Blau, The Open University of Israel, Israel; Orit Avidov-Ungar, Achva Academic College, Israel

"I hadn't thought of that": ChatGPT for writing materials and English teachers' cognition enrichment 40
Maria Laura Ferroglio, University of Turin, Italy

Augment, don't automate: An evidence-based workflow for human-GenAI collaboration in exam question generation 42
Remco Jongkind, Sarah Otto, Inayah Hodzic, Myrthe Heikens, Amsterdam UMC, University of Amsterdam, Amsterdam Public Health Institute, the Netherlands; Lodewijk Pet, Leiden University Medical Centre, The Netherlands; Floor van der Steijle, Tom Broens, Amsterdam UMC, University of Amsterdam, Amsterdam Public Health Institute, the Netherlands

"It's Over. You Cannot Beat AI": Educator Framing of Student AI Use in Online Teaching Communities 44
Paula Rațiu, Babeș-Bolyai University, Romania

Digital well-being

I'm addicted to doomscrolling and it's rotting my attention span completely 46
Louise Nagle, Munster Technological University, Ireland

Teacher and Learner Wellbeing in an AI World: How can we design for Affective, Relational, and More-Than-Human Entanglements? 47
Bettina Schwenger, University of Auckland, New Zealand

Student partnership to support AI engagement

Create, Think, Trust: Embedding Engagement in GenAI through Student Partnership 49
Fionnuala Darby, TU Dublin, Ireland

'Design your Dream Assessment': Students reveal the unwritten rules of assessment design for the AI era 51
Laila Burton, Graham Garforth, Mychelle Pride, Open University, UK

Navigating the Gap Between SRL and GenAI-SRL in Higher Education 53
Meital Amzalag, Holon Institute of Technology, Israel; Omri Hadar, The Hebrew University of Jerusalem, Israel

AI approaches in learning and teaching research

Barbie as Metaphor for Generative AI in Higher Education 55
Carmen Vallis, The University of Sydney, Australia

From Workplace Experience to Competence Development: An AI-Supported Reflection Tutor for Dual Higher Education 57
Jörn Allmang, Ulf-Daniel Ehlers, Baden-Wuerttemberg Cooperative State University, Germany

Measuring Resilient Agency in the Age of Human-AI Collaboration: The RAPS Model 59
Tomas Butvilas, Ugnė Supranavičienė, Mykolas Romeris University, Lithuania

An Interactive Application to Support Learning from Digital Systems to Embedded Systems 61
Carlos Verenzuela, Duarte Lourenço, Francisco Matos, Guilherme Gabino, Joaquim Martins, João Pinho, Fábio Coutinho, Arnaldo Oliveira, Universidade de Aveiro, Portugal

GenAI in Computational Thinking: A Design Approach to Assessment and Student Reasoning 63
Noga Reznik, Maya Usher, Rina Esipovich-Polonsky, Dan Kohen-Vacs, Holon Institute of Technology, Israel

Education with, for and about AI

ThinkAI: Supporting Critical GenAI Evaluation Through Simulation (Study in Progress) 65
Netta Soreq, Gila Kurtz, Holon Institute of Technology (HIT), Israel; Alon Bartal, Bar-Ilan University, Israel; Yael Dubinsky, Ramat Gan College RGC, Israel; Eran Gal, Holon Institute of Technology (HIT), Israel; Sigal Tifferet, Ruppin Academic Center, Israel; Shlomo Mark, Sami Shamoon College of Engineering, Israel; Gilad Ravid, Ben-Gurion University of the Negev, Israel; Koby Azran, The Edmond de Rothschild Bridge for Higher Education and Employment, Israel; Yaara Welcman, Tel Aviv University, Israel

Listening pedagogies to support ethical decision-making in the age of AI 67
Stephanie Wilson, The University of Sydney Business School, The University of Sydney, Australia

An Updated Ecopedagogical Framework for AI Policy in Higher Education 69
Dewa Wardak, Stephanie Wilson, The University of Sydney Business School, The University of Sydney, Australia

Automated Outcome Feedback vs Chatbot-Based Process Scaffolding for Verbal Analogies in Adults With and Without ADHD 71
Adi Brann, Yael Sidi, Ina Blau, The Open University of Israel, Israel

Learner Motivations in Human–AI Collaborative Reading: The AIR scale 73
Yael Sidi, The Open University of Israel, Israel; Shir Etgar, Tel-Aviv University, Israel; Adi Brann, The Open University of Israel, Israel

From Experimentation to Process-Oriented Use: A Two-Year Snapshot of First-Year Students' Generative AI Adoption in Design Courses.....75
Nohar Raz Fogel, Lilach Gal, HIT, Israel

The student-defined place of genAI support for interactive oral assessment 77
Elly Meredith, Alison Casey, University of Sydney School of Business, Australia

Reading the Machine: Hermeneutics and Critical AI Literacy in a Literature Classroom 78
Randall Fullington, University of Colorado Boulder, US

Critical evaluation of two AI tools used in Biochemical Engineering teaching.....80
Mauryn Chika Nweke, Rana Khalife, University College London, UK

Enhancing student agency in AI-assisted learning environments: the DiHor project 82
Lucia Cintia Colibaba, University of Life Sciences Iasi, Romania; Irina Gheorghiu, Albert Ludwigs University Freiburg, Germany; Ioan Juncu, Carmen Antonita, EuroEd Highschool Iasi, Romania; Stefan Colibaba, EuroEd foundation Iasi, Romania

Click, Chat, Consult: Medical students practising history taking with an AI-based virtual patient...84
Jesper Pool, Remco Jongkind, University of Amsterdam, Amsterdam University Medical Center, The Netherlands; Inayah Hodžic, Isabelle Paans, University of Amsterdam, the Netherlands; Eline Verberne, University of Amsterdam, Amsterdam University Medical Center, The Netherlands; Suzanne Geerlings, Inge Henselmans, Amsterdam University Medical Center, The Netherlands

Can AI Spark Wonder? Reclaiming Curiosity in Human–AI Collaboration for Management Education 86
Lucy Gill-Simmen, University of London, UK

Generative AI in academic writing: Developing a process-oriented model 88
Palitha Edirisingha, Haiyan Xu, University of Leicester, UK; Paulo Dias, Universidade Católica Portuguesa, Portugal

From Users to Makers: Teaching Effective AI Literacy Through Student-Designed AI Tutors 90
Sophie van Dijke, Floor van der Steijle, Charlotte Lafage, Minke Holleboom-Geerlings, Remco Jongkind, Amsterdam UMC, University of Amsterdam, the Netherlands

Redefining scientific skills education: A Dutch national Delphi study on whether and when students can use generative AI 92
Remco Jongkind, Birgit van Berlo, Sarah Otto, Florine van Driessen, Amsterdam UMC, University of Amsterdam, the Netherlands; Tommy Pattij, Amsterdam UMC, VU University, the Netherlands; Suzanne Geerlings, Amsterdam UMC, University of Amsterdam, the Netherlands

Evolution of Transparent GenAI Use in Online Assessment: Results from a Two-Year Case Study at Universidade Aberta 94
João Paz, António Moreira Teixeira, Cecília Tomás, Paula Pedroso, Maria João Ramalheiro, Universidade Aberta, Portugal

Fostering Critical AI Literacy Through Project-Based Learning and Peer Assessment: Evidence from an Undergraduate Education Course at Universidade Aberta, Portugal 96
Cecília Tomás, António Moreira Teixeira, João Paz, Maria do Carmo Teixeira, Universidade Aberta, Portugal

Enhancing Digital Learning Design with AI Integration into myScripting 98
Claude Müller, Zurich University of Applied Sciences, Switzerland

An Experience with an Educational Chatbot 100
Rutinelli da Penha Fávero, Elton Vinícius Silva, Coordenadoria Geral de Tecnologias Educacionais, Ifes/Cefor, Brasil

Transformative innovation through AI in education

Exploring Generative AI with Higher Education lecturers at an Irish University 102
Annette Cosgrove, Noreen Henry, Carina Ginty, Atlantic Technological University, Ireland

The Opportunities, Challenges and Roles of genAI-Facilitated Reflective Writing 104
Jenny Moffett, Patrick Keegan, RCSI University of Medicine and Health Sciences, Ireland; Seyed Parsa Neshaei, Machine Learning for Education (ML4ED) lab, Swiss Federal Institute of Technology (EPFL), Switzerland; Dara Cassidy, RCSI University of Medicine and Health Sciences, Ireland

AI-Supported Adaptive Learning from Source Materials: A Pilot Digital Learning Platform 105
László Szilágyi, SILINFO Consulting Kft., Hungary

Bridging the Chasm: Institutional Barriers and Drivers of Generative AI Adoption in an Engineering Faculty 106
Liezl van Dyk, North-West University, South Africa

Exploring the Impact of Generative Artificial Intelligence in Distance Learning in the Near Future: A Delphi Study Perspective 108
Palitha Edirisingha, University of Leicester, UK; Phil Wood, Nottingham Trent University, UK

Risk Storylines and Impact Chains as visual frameworks for interdisciplinary and experiential Learning in complex systems 110
G. Tocchi, M. Polese, A.M. Zaccaria, University of Naples Federico II, Italy; A. Peresan, National Institute of Oceanography and Applied Geophysics, Italy; C. Marciano, A. Pirni, University of Genoa, Italy; M. Pittore, Eurac Research, Italy

Virtual Testbeds for Multi-Hazard Urban Risk Assessment: Insights from the Inland RETURNVILLE Application 112
G. Tocchi, C. Del Gaudio, M. Di Domenico, M. Gaetani d'Aragona, M. Polese, G. M. Verderame, A. Prota, University of Naples Federico II, Italy

Inclusive Potentials vs. Exclusion Risks of AI in Education: A Comparative Policy Analysis Across the DACH Region and German Federal States 114
Edvina Besic, University of Vienna, Austria; Lea Schulz, University of Flensburg, Germany

Personalized learning

Implementing Generative AI Tutoring at Scale: Student Adoption and Impacts 116
Caitlin Kirby, University of Tübingen, Germany

Beyond Data Signals: A University-Industry Collaboration for Agile Learning Design 118
Carles Bruguera, Natalí Basilico, Paula Pedro, Universitat Oberta de Catalunya (UOC), Spain

Assessment and micro-credentials

Exams in Transition: Multimodal Assessment Design in the Age of AI 120
Gerhard Geissler, Franz-Karl Skala, Vienna University of Economics and Business, Austria

Applying Open Education Principles to Microcredentials: Lessons from an Open Durable Skills Initiative 122
Başak Büyükçelen, Pressbooks, Canada

Learning to learn in the Age of AI: A Case Study on a Micro-Credential course 124
Hanne Kristin Dypedal, Per Ivar Kjærgård, NLA University College, Norway

Towards a European Model for Human-AI-Ready Education Ecosystems 126
Ulf-Daniel Ehlers, Aleydis Kleine-Allekotte, Baden-Württemberg Cooperative State University, Germany

Micro-Credential Interoperability in European University Alliances: Designing an Empirical Study 128
Sara Guerra, Annamaria Desantis, Tommaso Minerva, University of Modena and Reggio Emilia, Italy

Education quality

Exploring AI-Supported Course Description Improvement: A Pilot Study 130
Jason Myrick, The American University in Cairo, Egypt

Commuter students: A student-centred, whole provider approach 132
Liz Thomas, University of York, UK; Carina Ginty, Atlantic Technological University (ATU), Ireland; Moira Maguire, Dundalk Institute of Technology (DKIT), Ireland

Guiding Appropriate AI Use in Math Teacher Seminar Papers 134
Sabine Segre, Achva Academic College, Hemdat Hadarom Academic College of Education, Israel

Collaborative Pathways for AI Education in a UK and Irish University 136
Gill Knight, University of Wolverhampton, United Kingdom; Billy Bennett, Atlantic Technological University, Ireland

The digital future of European mobility: transforming institutions, empowering students 138
Deborah Arnold, NTT DATA, France; Giacomo Bulian, Daria Malareva, NTT DATA, Belgium

When Everyone Is Responsible, No One Is: Organizational Barriers to Embedding Professional Digital Competence in Teacher Education 140
Sigrun Lindaas Norhagen, NLA University College, Norway

Professional development and digital scholarship

Beyond a Single Score: Integrating Cognitive Tasks in Online Teacher Professional Development Transfer Research 144
Gerda Ana Melnik-Leroy, Tatjana Jevsikova, Dovilė Stumbrienė, Vilnius University, Lithuania; Yasemin Gulbahar Guven, Columbia University, USA; Vilnius University, Lithuania

A radically mundane approach to genAI technologies in higher education: A call to avoid magical thinking on capacity building for digital transformation 145
James Brunton, Dublin City University, Ireland

Project-based Assessment for Digital Entrepreneurship Students 147
Vlad Mihaescu, Diana Andone, Politehnica University of Timisoara, Romania

POSTER ABSTRACTS 149
The human side of AI in education

Programme-Level TEL for Human-Centred Educational Decision-Making 150
Shaun Ferns, Barry Ryan, Fionnuala Darby, Technological University Dublin, Ireland

Bourdieu and Digital Educational Inequalities in the Age of AI: A Study Design 152
Philipp Preyhaupt, University of Klagenfurt, Austria

Supporting metacognition and perspective change with AI mediated reflection: The Perfact Perspectives AI-Advisor 154
Joel T. Schmidt, University of Applied Management, Germany; Min Tang, University Institute of Schaffhausen, Switzerland; Christoph Schmidt-Mårtensson, Marek Bartos, create-mediadesign GmbH, Austria; Christoph Stieg, Perfact Consulting (Liechtenstein) GmbH, Liechtenstein

The changing role of the Teacher

Human-AI Collaboration in Distance Education: Student Perceptions about the Reconfiguration of the Teacher's Role 157
Alexandra Bastos, António Moreira Teixeira, João Paz, Universidade Aberta, Portugal

Digital well-being

Well-being in Digital Education Ecosystem (WINDEE) 159
Airina Volungevičienė, Giedrė Tamoliūnė, Vytautas Magnus University, Lithuania; Ksenija Frelih, Knowledge Innovation Centre, Malta; Indrė Oleškevičienė, Vytautas Magnus university, Lithuania; Elena Trepulė, EDEN Digital Learning Europe, Estonia

Education with, for and about AI

The educational affordances of Hybrid-Intelligence: Who will be the judge? 161
Jan Petrus Bosman, Wim Van Petegem, Tinne De Laet, KU Leuven, Belgium; Nompilo Tshuma, Stellenbosch University, South Africa

Artificial Intelligence for Mentoring Dyads in Apprenticeship: Developing the Pedagogical Competencies of Company Craftsmen 163
Rita Mičiulienė, Nijolė Čiučiulkienė, Vytautas Magnus University, Lithuania; Edita Balzarienė, Arts and Design Training Center, Lithuania; Rasa Didžiulienė, Vytautas Magnus University, Lithuania

Feel the Code: How Vibe-Coding and TMI Spark Creative Learning 166
Runar Eikhaug, NLA University College, Norway

Transformative innovation through AI in education

Marketing Artificial Intelligence Assistant (MAIA) 167
Rodger Faherty, Technological University Dublin, Ireland

Multimedia Learning Environment: User-Oriented AI Integration 169
Christine Siemer, Vivian Harberts, University of Bremen, Germany

AI-based Design: Follow-Up Qualification of CVET-Mentors 171
Christine Siemer, Frieda Klaus, University of Bremen, Germany

A participatory process to support whole-school digital transformation 173
Ane Zubizarreta Pagaldai, Amaia Arroyo Sagasta, Mondragon Unibertsitatea, Spain

WePlay: A European Gamification Platform for Inclusive and Engaging Education 175
Genutė Gedvilienė, Monika Dievaitytė-Baikštienė, Vytautas Magnus University, Lithuania

Designing a Student-Centered Fashion Platform: A Collaboration in AI-Integration 177
Jasmin Kwon, Middle Tennessee State University, US

Assessment and micro-credentials

Innovating Healthcare Education: A Modular MOOC Approach to Enhancing Soft Skills with Micro-Credentials 178
Estela Daukšienė, Indrė Oleškevičienė, Vytautas Magnus University, Lithuania; Otčenášková Tereza, Marek Zanker, Martina Husáková, University of Hradec Kralove, Czech Republic; Ilja Tachecí, Charles University, Czech Republic; José Blas Pagador Carrasco, Luisa Fernanda Sánchez Peralta, Jesus Usón Minimally Invasive Surgery Centre (CCMIJU), Spain; Jānis Pekša, Turiba University, Latvia; Nina Pereza, University of Rijeka, Croatia

Bridging Institutions through Open Course Data: QualityLink's Platform and Quality Indicators for Micro-Credentials 180
Estela Daukšienė, Elena Trepulė, EDEN Digital Learning Europe, Estonia; Jochen Ehrenreich, Baden-Wuerttemberg Cooperative State University (DHBW), Germany; Colin Tück, Knowledge Innovation Centre, Slovenia; Arantza Mongelos Garcia, Mondragon University, Spain; Tiago Simões, European University Foundation, Hungary

The TTT Model: A Three-Step Approach to Tracing Professional Digital Competence in Teacher Education Coursework 182
Sigrun Lindaas Norhagen, NLA University College, Norway

Surfacing the AI Assumption in Professional Certification: A Three-State Model for Modified Angoff Cut Score Panels 185
Marolyn Deidre Machen, Independent Researcher, US

Professional development and digital scholarship

Didactic Strategies in the Creation of Augmented Reality Digital Content by Pre-service Primary School Teachers 187
Delsa Silva Amino Cufuna, Josep M Duart , Universitat Oberta de Catalunya, Spain; Gizeh Rangel-de Lazaro, University of Malaga, Spain, University of London, UK

Design and validation of a Digital Competence progression model for compulsory education 189
Amaia Arroyo-Sagasta, Ane Zubizarreta Pagaldai, Mondragon Unibertsitatea, Spain

Preparing Future Teachers for Human–AI Collaboration: Insights into Emotional Intelligence and Ethical AI Use 191
Rita Mičiulienė, Rasa Didžiulienė, Nijolė Čiučiulkienė, Vytautas Magnus University, Lithuania

The Dynamics of Mentor Competencies in Online Mentoring 195
Nijolė Čiučiulkienė, Rasa Didžiulienė, Vytautas Magnus University, Lithuania

Multimedia Use in Higher Education: Reflections from the Action Research Activities within the e-Universities Project (2023–2025) 197
Martina Hribar, Mirna Babić, Croatian Academic and Research Network – CARNET, Croatia; Sandra Kučina Softić, Tona Radobolja, University Computing Centre of the University of Zagreb – Srce, Croatia; Jasminka Maravić, Klara Bilić, Croatian Academic and Research Network – CARNET, Croatia

ACTION LABS 199
The Human side of AI in Education

Project synergy session for EDEN DLE institutional members 200
Estela Daukšienė, Vytautas Magnus University, Lithuania, EDEN DLE, Estonia; Marc Romero, Teresa Romeu, UOC, Spain; Zrinka Popić, University Computing Centre, University of Zagreb, Croatia; Giedrė Tamoliūnė, Vytautas Magnus University, Lithuania, EDEN DLE, Estonia; Vlad Mihaescu, Politechnica University of Timisoara, Romania; Janika Leoste, Tallinn University, Estonia; Jochen Ehrenreich, DHBW, Germany; Marieke Decock, Itec, imec research centre of KU Leuven, Belgium; Mildred Kyte, Western Norway University of Applied Sciences, Norway

Designing Personalised Human-AI Instruction Practices 202
Guy Cohen, Alla Bronshtein, Adi Yaakov Azaria, Chen Bitton, Merav Rotary Saban, Yaffa Krieff, Anat Cohen, Tel Aviv University, Israel

BETTER 2040: An action lab on traversing the complexity and crisis of AI in Higher Education 204
Peter Bryant, Craig Gilliver, University of Sydney Business School, Australia; Donna Lanclos, Independent Researcher, North Carolina, US; Lawrie Phipps, University of Chester, UK

Wellbeing in the AI University: Caring for the human in a human-AI era 206
Mychelle Pride, Open University, UK; Kate Lister, Arden University, UK

Designing for Inclusive Learning, Teaching and Assessment in an AI World 208
Torunn Gjelsvik, International Council for Open and Distance Education – ICDE, Norway

Show Me What You Know: Intentional Cognitive Offloading, Teacher Agency and Human Value in AI-Rich Education 210
Janika Leoste, Tallinn University, Estonia

Transformative innovation through AI in education

Teaching with AI Tutor Pro (Part I of a Two-Part Action Lab) 212
Ron Owston, Contact North | Contact Nord, Canada

Teaching with AI Teaching Assistant Pro (Part II of a Two-Part Action Lab) 214
Ron Owston, Contact North | Contact Nord, Canada

Global learning networks

DELA Action Lab: Leading institutional change for the responsible use of GenAI 216
Deborah Arnold, NTT DATA, France; Ronan Bree, Dundalk Institute of Technology; Ireland; Albert Sangrà, Universitat Oberta de Catalunya, Spain

EDEN NAP: Building community through research exchange 218
Giedrė Tamoliūnė, Vytautas Magnus University, Lithuania; Fiona Aiken, The Open University, UK; Inés Gil-Jaurena, Universidad Nacional de Educación a Distancia, Spain; Vlad Mihaescu, Polytechnic University of Timişoara, Romania; Carlo De Medio, University of Roma Tor Vergata, Italy; Mark McCormack, Maynooth University, Ireland

CONCISE PAPERS

AI-Supported Course-Level Quality Assurance in Higher Education: A Human-AI Comparative Microstudy

Jason Myrick[1]

[1] Center for Learning and Teaching, The American University in Cairo, Egypt; jason.myrick@aucegypt.edu

Correspondence: Jason Myrick: jason.myrick@aucegypt.edu

Abstract:

Artificial intelligence (AI) is increasingly proposed as a means of supporting quality assurance (QA) and learning design review in higher education. While prior research has examined AI applications in learning analytics and student-facing systems, there remains limited empirical work investigating how AI interacts with professional judgment during course-level QA processes. In particular, little is known about how educators interpret, negotiate, or contest AI-generated analyses when conducting evaluative review tasks.

This paper presents an exploratory, human-centered microstudy examining AI-supported course-level quality assurance in undergraduate education. The study focuses on a single, authentic QA task: reviewing alignment between course learning outcomes (CLOs) and course assessments. Two review conditions are compared: a human-only review using established QA criteria and professional judgment, and an AI-supported review in which the same task is conducted with the assistance of AI-generated analytical prompts. In the AI-supported condition, AI outputs are explicitly positioned as advisory, with reviewers retaining full authority over all evaluative decisions.

Rather than treating agreement between human and AI judgments as an indicator of correctness, the study treats divergence as analytically meaningful. A discrepancy classification framework is used to examine patterns of agreement, disagreement, and interpretive negotiation between review conditions. Data collection is currently underway and includes alignment judgments, reviewer rationales, reflective notes, and time-on-task measures.

By foregrounding professional reasoning and contextual interpretation, this work contributes a structured empirical approach for studying human-AI interaction in quality assurance contexts. The study demonstrates the feasibility of small-scale comparative designs in under-researched domains and contributes to ongoing discussions around human-centered AI, responsible adoption, and the role of professional judgment in higher education quality assurance processes.

Keywords: artificial intelligence (AI); quality assurance (QA); human-centered AI; course design; higher education; exploratory research

Selected References

Amershi, S., Weld, D., Vorvoreanu, M., Fourney, A., Nushi, B., Collisson, P., Suh, J., Iqbal, S., Bennett, P. N., Inkpen, K., Teevan, J., Kikin-Gil, R., & Horvitz, E. (2019). Guidelines for human-AI interaction. Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, 1-13. https://doi.org/10.1145/3290605.3300233

Cammarano, A., Varriale, V., Michelino, F., & Caputo, M. (2024). A framework for investigating the adoption of key technologies: Presentation of the methodology and explorative analysis of emerging practices. IEEE Transactions on Engineering Management, 71, 3843-3860. https://doi.org/10.1109/TEM.2023.3240213

Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science in information systems research. MIS Quarterly, 28(1), 75-105. https://doi.org/10.2307/25148625

Holstein, K., & Aleven, V. (2022). Designing for human-AI complementarity in K-12 education. AI Magazine, 43(2), 239-248. https://doi.org/10.1002/aaai.12058

Shneiderman, B. (2020). Human-centered artificial intelligence: Reliable, safe & trustworthy. International Journal of Human-Computer Interaction, 36(6), 495-504. https://doi.org/10.1080/10447318.2020.1741118

UNESCO. (2021). Artificial intelligence and education: Guidance for policy-makers. UNESCO Publishing. https://unesdoc.unesco.org/ark:/48223/pf0000376709

Wise, A. F., & Shaffer, D. W. (2015). Why theory matters more than ever in the age of big data. Journal of Learning Analytics, 2(2), 5-13. https://doi.org/10.18608/jla.2015.22.2

A Collaboration Framework for ESL and Mandarin Speaking Instruction, A Design-Based Study on AI-Assisted Pedagogy to Enhance Student Engagement and Performance

Alice Xiuxia Li[1]

[1] Centre for Lifelong Learning, the University of Warwick, UK; alice.li.3@warwick.ac.uk

Correspondence: Alice Xiuxia Li: alice.li.3@warwick.ac.uk

Abstract:

Although research highlights the potential of AI-powered tools in language education, my work experience in an educational technology company suggests challenges when these tools are used without humans. This aligns with the research findings of Fryer et al. (2017), Song and Song (2023), Davis (2022) and Saleem et al. (2025), that standalone AI technologies can result in less sustained interest and reduced learning outcomes. Chan and Tsi (2024) and Satar (2021) further contend that AI cannot replicate human thinking, creativity, or emotional interaction, and its predictable responses may weaken long-term engagement. However, much of the existing literature emphasises AI's technological capabilities or roles in language education rather than its integration with human teachers (i.e., De la Vall & Araya, 2023; Xu et al., 2021; Sun et al., 2024; Leat & Taylor, 2023). The pedagogical integration of AI remains under-researched (Muthmainnah et al., 2022; Godwin-Jones, 2022). Therefore, Chatfield (2025) and Moulieswaran and Prasantha (2023) call for active teacher involvement in both research and design processes to ensure AI applications align with learning objectives and to support the development of useful practices. AI research should focus not on replacing teachers but on enhancing teacher-student interaction (Asrifan & Dewi, 2024).

Grounded in sociocultural perspectives that conceptualise learning as socially mediated, this study investigates not only how AI-powered speaking tools can be integrated into teacher practice, but also the methodological challenges that arise when researching such integration in dynamic classroom environments. To achieve these aims, this research will address the following questions:

1. Which design features of AI-powered tools support student engagement and performance in speaking instruction?

2. How can AI-supported approaches be used to improve student engagement and performance?

3. What are the perceptions and experiences of students and teachers towards AI-teacher-student collaboration?

4. What are the challenges and barriers in AI-teacher-student collaboration? And how can they be addressed?

5. How can a design framework be developed to support AI-teacher-student collaboration in speaking instruction?

Adopting a design-based research (DBR) methodology, the study collaborates with six volunteer teachers from higher education institutions in the UK (Mandarin learners) and China (English learners) over one year. Across three iterative cycles, teachers, students and the researcher co-design, implement, and refine AI-supported speaking activities within authentic settings.

The study anticipates that AI-teacher-student collaboration will generate tensions related to teacher agency, task design, learner expectations, and the evolving affordances of AI technologies. Methodologically, challenges are

expected to emerge in balancing research control with ecological validity, managing tool updates during iterative cycles, and capturing changes in engagement quality across contexts. Rather than treating these constraints as limitations, the study analyses them as central data for understanding sustainable AI-teacher-student collaboration.

By systematically documenting pedagogical adaptations and methodological tensions across cycles and cultural contexts, the research aims to generate a context-sensitive framework outlining both design principles and research considerations for AI-supported speaking instruction in higher education. In doing so, it contributes to theoretical discussions of human-AI mediation and advances methodological knowledge in conducting design-based research in rapidly evolving technological environments.

Keywords: AI-teacher-student collaboration, speaking instruction, ESL, Mandarin

---

References

Asrifan, A., & Dewi, A. C. (2024). AI-driven classroom conversations: Revolutionizing Education 5.0 for enhanced student engagement in speaking skills. JETAL: Journal of English Teaching & Applied Linguistics, 5(2), 117–131.

Chatfield, T. (2025). AI and the future of pedagogy (White paper). Sage. https://doi.org/10.4135/wp520172

Chan, C. K. Y., & Tsi, L. H. Y. (2024). *Will generative AI replace teachers in higher education? A study of teacher and student perceptions*. *Studies in Educational Evaluation, 83*, 101395. https://doi.org/10.1016/j.stueduc.2024.101395

Davis, G. M. (2022). Humanlike conversational artificial intelligence agents for foreign or second language learning: User perceptions, expectations, and interactions with agents (Doctoral dissertation, Stanford University).

De la Vall, R. R. F., & Araya, F. G. (2023). Exploring the benefits and challenges of AI-language learning tools. International Journal of Social Sciences and Humanities Invention, 10(01), 7569-7576.

Fryer, L. K., Ainley, M., Thompson, A., Gibson, A., & Sherlock, Z. (2017). Stimulating and sustaining interest in a language course: An experimental comparison of chatbot and human task partners. *Computers in Human Behavior, 75*, 461–468. https://doi.org/10.1016/j.chb.2017.05.045

Godwin-Jones, R. (2022). Partnering with AI: Intelligent writing assistance and instructed language learning. Language Learning & Technology, 26(1), 1–13.

Leapt, R., & Taylor, P. (2023). Perceived benefits and challenges regarding the use of ChatGPT in English language learning: a study of L2 postgraduate students (Doctoral dissertation, Thammasat University).

Muthmainnah, Ibna Seraj, P. M., & Oteir, I. (2022). Playing with AI to investigate human–computer interaction technology and improving critical thinking skills to pursue 21st century age. Education Research International, 2022, 6468995.

Moulieswaran, N., & Prasantha Kumar, N. S. (2023). Investigating ESL Learners' Perception and Problem towards Artificial Intelligence (AI)-Assisted English Language Learning and Teaching. *World Journal of English Language*, *13*(5), 290-298. https://doi.org/10.5430/wjel.v13n5p290

Song, C., & Song, Y. (2023). Enhancing academic writing skills and motivation: assessing the efficacy of ChatGPT in AI-assisted language learning for EFL students. Frontiers in Psychology, 14, 1260843.

Satar, M. (2021). Speaking with machines: Interacting with bots for language teaching and learning. In T. Beaven & F. Rosell-Aguilar (Eds.), *Innovative language pedagogy report* (pp. 133–138). Research-publishing.net. https://doi.org/10.14705/rpnet.2021.50.1248

Saleem, T., Saleem, A., & Aslam, M. (2025). *Integrating AI in Pakistani ESL classrooms: Teachers' practices, perspectives, and impact on student performance. PLOS ONE, 20*(9), e0333352. https://doi.org/10.1371/journal.pone.0333352

Sun, C., Major, L., Moustafa, N., Daltry, R., & Friedberg, A. (2024). Learner agency in personalised content recommendation: Investigating its impact in Kenyan pre-primary education. In A. M. Olney, I.-A. Chounta, Z. Liu, O. C. Santos, & I. I. Bittencourt (Eds.), *Artificial intelligence in education: Posters and late breaking results, workshops and tutorials, industry and innovation tracks, practitioners, doctoral consortium and blue sky* (pp. 209–216). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-64312-5_25

Xu, Y., Wang, D., Collins, P., Lee, H., & Warschauer, M. (2021). Same benefits, different communication patterns: Comparing Children's reading with a conversational agent vs. A human partner. *Computers & Education*, *161*, 104059. https://doi.org/10.1016/j.compedu.2020.104059

Pedagogical Agency with Generative AI: An Open Practice in Teacher Education

Sara Builds[1], Francesc M. Esteve-Mon[2], Maria Ángeles Llopis Nebot[3], Anna Sánchez-Caballé[4], Victoria I. Marín[5]

[1] Department of Pedagogy and Didactics of Social Sciences, Language and Literature, Jaume I University, Spain; sbuils@uji.es
[2] Department of Pedagogy and Didactics of Social Sciences, Language and Literature, Jaume I University, Spain; festeve@uji.es
[3] Department of Pedagogy and Didactics of Social Sciences, Language and Literature, Jaume I University, Spain; mallopis@uji.es
[4] Department of Pedagogy and Didactics of Social Sciences, Language and Literature, Jaume I University, Spain; acaballe@uji.es
[5] Department of Education Sciences, University of Lleida, Spain; victoria.marin@udl.cat

Correspondence: Sara Builds: sbulis@uji.es

Abstract:

In recent years, Generative Artificial Intelligence (GenAI) has permeated the daily lives of citizens and has established a significant presence within higher education institutions (Sánchez-Caballé & Santos, 2025). GenAI, alongside data analytics and digital rights, raises profound ethical considerations that extend beyond merely instrumental digital competence. Therefore, it is imperative to develop a Critical Digital Competence (CDC) that enables individuals to exercise their human agency in the face of increasing digitalization (Aagaard & Lund, 2020), particularly in the initial teacher training.

This research is framed within a broader R&D project whose overarching objective is to design and validate a pedagogical framework for the development of Open Educational Practices (OEP) in Higher Education. This communication presents the design and evaluation of an OEP focused on the integration of AI in education, aimed at improving the CDC of pre-service teachers. Specifically, the intervention encompasses the generation of didactic activities. All resulting materials were subsequently adapted and openly shared.

The design of this OEP was grounded in the CDC conceptual framework (Marín et al., 2024). The intervention was implemented with a sample of 89 pre-service teachers. Subsequently, a comprehensive evaluation was conducted through an in-depth interview with the instructor, a focus group comprising seven students, and a content analysis of a selection of student-generated artifacts.

According to the students' reflections, the use of GenAI in education offers many opportunities, especially to support teachers in tasks such as planning activities, creating materials, and communicating with families. However, they argue that AI does not always provide accurate or neutral information, as it can be biased and contain errors. For this reason, it is essential to critically review the content generated. To conclude, this study contributed to strengthening students' critical digital competence as future teachers, particularly their pedagogical agency, which is essential in an increasingly digitalised educational context (Marín et al., 2025).

Acknowledgements

This communication is part of the R&D&I project PID2022-136291OA-I00, funded by MCIN/AEI and FEDER and by the Universitat Jaume I (Ref.: 59428/26).

Keywords: Agency for Learning; Critical Digital Competence; Higher Education; Open Educational Practices; Teacher Education

References

Aagaard, T., & Lund, A. (2020). Digital Agency in Higher Education. Transforming Teaching and Learning. Routledge Focus.

Marín, V. I., Tur, G., Castañeda, L., Peguera-Carré, M. C., Orellana, M. L., Villagrá, S., & Carrera, X. (2025). Agencia y aprendizaje en la Educación Superior: una revisión sistemática. *UTE Teaching & Technology (Universitas Tarraconensis), 1,* e4035. https://doi.org/10.17345/ute.2025.4035

Marín, V. I., Tur, G., Castañeda, L., Orellana, M. L., Peguera, M. C., Villagrá, S. L., Esteve-Mon, F. M., Carrera, X., & Abascal, M. (2024). *A Conceptual Framework for Critical Digital Competence. CoDiCri*. https://doi.org/10.5281/zenodo.15804869

Sánchez-Caballé, A. & Santos, C. (2025). Perspectives of Higher Education in Spanish and Portuguese Institutions on Artificial Intelligence: A Content Analysis. *EDUTEC. Revista Electrónica de Tecnología Educativa, 92*, 253–270. https://doi.org/10.21556/edutec.2025.92.3879

A Concise Review: Evaluating Staff and Student Perceptions on the use of AI at UCL Engineering

Irina Lazar[1], Mauryn Chika Nweke[2]

[1] Department of Science, Technology, Engineering and Public Policy, University College London, UK; i.lazar@ucl.ac.uk
[2] Department of Biochemical Engineering, University College London, UK; c.nweke@ucl.ac.uk

Correspondence: Mauryn Chika Nweke: c.nweke@ucl.ac.uk

Abstract:

This literature-informed overview establishes the foundation for a forthcoming study examining staff and student perceptions of AI tools used within UCL Engineering. Research highlights that cultural norms surrounding help-seeking and academic independence significantly influence how learners engage with AI. In contexts where autonomy is prized, seeking assistance (whether from humans or digital systems) may be perceived as a weakness, positioning AI as a discreet means of resolving uncertainties. However, in more dialogic learning cultures, AI tends to function as a routine supplementary resource. Such variation raises important questions about whether AI reduces help-seeking barriers or reinforces avoidance of direct academic interaction.

Stigma associated with AI-supported learning further affects engagement, as students often question the authenticity and acceptability of AI-assisted work. Cross-cultural differences in understandings of plagiarism and authorship compound this uncertainty, shaping how AI-generated content is interpreted. Gendered patterns also appear relevant, with women showing slightly lower confidence in AI use and heightened concern about rule adherence.

Within UCL Engineering, multiple AI tools, such as Studiosity, Vitafluence, and Labster, have been embedded in teaching alongside a structured policy framework for responsible GenAI use. The next phase of this study will investigate perceived benefits, risks, and policy effectiveness, informing faculty-level educational planning and pedagogical development.

Keywords: staff and student perceptions, UCL Engineering, AI tools, academic integrity

Below we present an overview of our literature review findings that will serve as a foundation for a subsequent study on staff and student perceptions on the use of various AI tools implemented at UCL Engineering.

Cultural norms around help-seeking and academic independence shape how students and staff perceive and use AI tools [Chang et al. 2020]. In traditions emphasising autonomy and perseverance, seeking help—whether from instructors or digital tools—may be viewed as a sign of weakness. In these contexts, personalised-AI can act as a discreet "face-saving" intermediary, allowing learners to clarify uncertainties without exposing gaps in understanding. Conversely, in cultures valuing dialogue and continuous feedback, AI may be regarded simply as an additional resource. These dynamics raise questions about whether AI lowers barriers to seeking help or reinforces existing reluctance toward direct academic exchange.

A related issue is the sense of stigma some students associate with AI-supported learning. Despite growing acceptance, AI use can carry moral connotations, with students questioning whether it undermines the authenticity of their work. Unclear boundaries between acceptable and excessive use contribute to anxiety about potential misconduct [Cotton et al. 2024]. Even when tools such as Vitafluence are formally introduced, students may fear judgement, especially in disciplines that emphasise originality.

These perceptions intersect with cross-cultural understandings of plagiarism and integrity [Arif 2025]. Students from educational systems that normalise imitation or collaborative knowledge-building may interpret AI-generated assistance differently from those trained in traditions prioritising individual authorship. Such ambiguity may explain why students still sought staff clarification despite feeling more confident after using the tool.

Finally, gendered patterns may influence AI adoption [Ofosu-Ampong 2023]. Women often exhibit greater caution around rule-bending and may be more sensitive to perceived expectations, aligning with their slightly lower confidence in AI's ability to enhance performance [Matobobo 2026]. Clear institutional guidance and the normalisation of transparent AI use may therefore reduce shame, ease uncertainty, and support more effective engagement.

At UCL Engineering, we have made efforts to embed the use of AI in our teaching and assessments through the use of AI tools such as Studiosity, Vitafluence, Labster, among others. We have also implemented policies on the use of GenAI in assessments via a categorisation system used to promote responsible GenAI use that will uphold academic integrity. Staff are expected to clarify to students how GenAI can and cannot be used in their assessments; these three categories give a framework staff can use to do so. They are designed to support staff in considering and clarifying what is, and is not, acceptable

Based on this, the next stage of the study aims to focus on the context of UCL Engineering to answer the following research questions:

How do staff and students perceive the benefits and risks of using AI tools in our engineering assignments?

Do current assessment policies help ensure academic integrity, equity, and educational value?

The outcomes of this study will help shape departmental and faculty education plans and inform pedagogical enhancements in the coming academic year.

References

Arif, S., 2025. Cross-cultural perspectives on AI in education: Case studies from global classrooms. AI EDIFY Journal, 2(1), pp.12-20.

Chang, J., Wang, S.W., Mancini, C., McGrath-Mahrer, B. and Orama de Jesus, S., 2020. The complexity of cultural mismatch in higher education: Norms affecting first-generation college students' coping and help-seeking behaviors. Cultural Diversity & Ethnic Minority Psychology, 26(3), p.280.

Cotton, D. R. E., Cotton, P. A. and Shipway, J. R. (2024) 'Chatting and Cheating: Ensuring academic integrity in the era of ChatGPT', Innovations in Education and Teaching International, 61(2), pp. 228–239. doi: 10.1080/14703297.2023.2190148.

Matobobo, C., 2026. A systematic review of gender differences in students' use of AI tools for learning in higher education. Discover Education, 5(1), p.90.

Ofosu-Ampong, Kingsley. (2023). Gender Differences in Perception of Artificial Intelligence- Based Tools. Journal of Digital Art & Humanities. 4. 52-56. 10.33847/2712-8149.4.2_6.

Unsettled: Global Perspectives on AI in Education

Luuk Terbeek[1]

[1] Centre for Teaching and Learning, Vrije Universiteit Amsterdam, Netherlands; l.terbeek@vu.nl

Correspondence: Luuk Terbeek: l.terbeek@vu.nl

Rationale

Technology can make our lives easier. However, learning often involves struggle. The recent rise of generative AI has intensified this tension, creating uncertainty and disruptive dilemmas in education worldwide. Therefore, the education sector needs to formulate an appropriate response. However, limited and fragmentary evidence regarding the effectiveness of AI in education can hinder the development of appropriate strategies. To promote a nuanced understanding among a broad audience, the book Unsettled explores the opportunities and risks of AI in education, enabling readers to make informed decisions to ensure educational quality. Unsettled is expected to be published in late 2026. During EDEN 2026, dialogue is actively sought for feedback and to inform conference participants about notable interim insights.

Structure

Unsettled consists of nine chapters evenly divided over 3 parts:

Part I. Governance, Epistemology and Guardrails (macro level)

1.1 Governing in Uncertain Times
1.2 Reimagining Epistemology
1.3 Guardrails and Consequences

Part II. Knowledge Infrastructure, Curriculum Change, and Collective Action (meso level)

2.1 Rethinking Knowledge Infrastructure
2.2 Curriculum Redesign
2.3 Collective Action for Transformation

Part III. Opportunities and Risks for Research, Teaching, and Learning (micro level)

3.1 Researching with AI
3.2 Teaching with AI
3.3 Learning with AI

Interviewees

Unsettled is built around in-depth conversations with over forty interviewees from all continents, across education sectors and organizational levels, including leading thinkers such as; Helen Crompton (Professor of Instructional Technology and Executive Director, Research Institute for Digital Innovation in Learning, Old Dominion University), Mutlu Cukurova (Professor of Learning and Artificial Intelligence, University College London), Isabelle Hau (Executive Director Stanford Accelerator for Learning, Stanford University), Shafika Isaacs, Chief of Section for Technology and AI in Education (UNESCO), Emma Ruttkamp-Bloem (AI Ethics Researcher, Professor and Head of Department of Philosophy at University of Pretoria, Chair of UNESCO's World Commission on the Ethics of Scientific Knowledge and

Technology), Andreas Schleicher (Director for Education and Skills, OECD) and Viktor Mayer-Schönberger (Professor of Internet Governance and Regulation, University of Oxford). Interviewees reflect on their most important insights and their personal contributions (e.g., books, scientific publications, frameworks, and approaches) are discussed in detail. Many voices are represented, from students to rectors and directors of leading institutes. Interviewees offer diverse perspectives on the tensions and complex challenges reshaping education.

Target audience

The primary audience of Unsettled consists of teachers, teacher educators, educational advisors, policy officers and educational leaders. In addition, the book is intended to inform and inspire students, researchers, and other professionals working in or involved with education.

Royalty donation commitment

The author intends to donate his entire share of the royalties to the UNESCO SDG 4 Emergency Fund, which aims to mitigate the severe impact of crises on education and strengthen resilience for the future. Interviewees were informed of this commitment after agreeing to participate; it did not influence their decision to contribute to this book.

About the Author

Luuk Terbeek is Strategic Advisor Digital Transformation in Education at VU Amsterdam. He focuses on the responsible and evidence-informed integration of AI in education, connecting policy, research, and practice.

Keywords: Generative AI in Education, Educational Governance, Curriculum Transformation, Responsible AI, Educational Quality

---

References

Decuypere, M., Hartong, S., Joecks, L., Knox, J., Ortegón, C., Schmidt, R., & Williamson, B. (2025). Critical Edtech Studies. Defining the field; envisioning the future. 2025 Position statement after the inaugural edition of the European Conference on Critical Edtech Studies (ECCES). DOI:10.5281/zenodo.17672486.

European Digital Education Hub's Squad on Artificial Intelligence in Education. (2023). AI report. Publications Office of the European Union. https://op.europa.eu/en/publication-detail/-/publication/9bb60fb1-b42a-11ee-b164-01aa75ed71a1/language-en

European Digital Education Hub's Squad on Explainable AI in Education. (2025). Explainable AI in education: Fostering human oversight and shared responsibility. Publications Office of the European Union. https://www.daad-brussels.eu/files/2025/06/EDEH_XAI-Report-1.pdf

European Parliament, & Council of the European Union. (2024, June 13). Regulation (EU) 2024/1689 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act). https://eur-lex.europa.eu/eli/reg/2024/1689/oj/eng

Holmes, W., Mouta, A., Hillman, V., Schiff, D., Laak, K.-J., Atenas, J., Bardone, E., Lochead, K., Gonsales, P., Havemann, L., Seon, J., Go, B., Schreurs, B., Zhgenti, S., Lee, K., Bali, M., Bialik, M., Medina-Gual, L., Knight, S., ... Yeo, B. (2025, June 26). Critical studies of artificial intelligence and education: Putting a stake in the ground [Preprint]. SSRN. https://doi.org/10.2139/ssrn.5391793

Miao, F., & Cukurova, M. (2024). AI competency framework for teachers. UNESCO. https://doi.org/10.54675/ZJTE2084

Miao, F., & Holmes, W. (2023). Guidance for generative AI in education and research. UNESCO. https://doi.org/10.54675/EWZM9535

Miao, F., Shiohira, K., & Lao, N. (2024). AI competency framework for students. UNESCO. https://doi.org/10.54675/JKJB9835

Npuls. (2025, July 14). AI GO! AI literacy in education: A practical framework. https://npuls.nl/en/knowledge-base/ai-go-ai-literacy-in-education-a-practical-framework

OECD. (2025). Empowering learners for the age of AI: An AI literacy framework for primary and secondary education (Review draft). OECD. https://ailiteracyframework.org/wp-content/uploads/2025/05/AILitFramework_ReviewDraft.pdf

OECD. (2025). Introducing the OECD AI Capability Indicators. OECD Publishing. https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/06/introducing-the-oecd-ai-capability-indicators_7c0731f0/be745f04-en.pdf

OECD. (2025). OECD Skills Outlook 2025: Building the skills of the 21st century for all. OECD Publishing. https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/12/oecd-skills-outlook-2025_ac37c7d4/26163cd3-en.pdf

OECD. (2025). What should teachers teach and students learn in a future of powerful AI? OECD Education Spotlights, No. 20. OECD Publishing. https://www.oecd.org/en/publications/what-should-teachers-teach-and-students-learn-in-a-future-of-powerful-ai_ca56c7d6-en.html

OECD. (2026). OECD Digital Education Outlook 2026: Exploring effective uses of generative AI in education. OECD Publishing. https://www.oecd.org/en/publications/oecd-digital-education-outlook-2026_062a7394-en.html

Ruttkamp-Bloem, E. (2023). Epistemic Just and Dynamic AI Ethics in Africa. In: Eke, D.O., Wakunuma, K., Akintoye, S. (eds) Responsible AI in Africa. Social and Cultural Studies of Robots and AI. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-031-08215-3_2

Schleicher, A., & Mitchell, S. (2025, June 3). From PISA to AI: How the OECD is measuring what AI can do. OECD.AI Wonk. https://oecd.ai/en/wonk/from-pisa-to-ai-how-the-oecd-is-measuring-what-ai-can-do

Terbeek, L. (2025) The AI Maturity in Education Scan (AIMES) Vrije Universiteit Amsterdam, & Universiteit van Amsterdam. https://vu.nl/en/education/more-about/the-ai-maturity-in-education-scan-aimes

UNESCO. (2022). Recommendation on the Ethics of Artificial Intelligence. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000381137

UNESCO. (2025). Promoting and protecting teacher agency in the age of artificial intelligence [Policy brief]. Teacher Task Force. https://teachertaskforce.org/knowledge-hub/promoting-and-protecting-teacher-agency-age-artificial-intelligence

CADET: Expert–AI Dual Training for Teacher Assessment

Tzu-Chien Liu[1]

[1]Department of Educational Psychology and Counseling; Institute for Research Excellence in Learning Sciences, National Taiwan Normal University, Taipei, Taiwan; tzuchien@ntnu.edu.tw

Correspondence: Tzu-Chien Liu: tzuchien@ntnu.edu.tw

Abstract:

Expert teachers possess rich tacit knowledge for evaluating preservice teachers' classroom performance, knowledge that is highly intuitive, context-dependent, and difficult to articulate. This challenge is particularly evident in complex domains such as classroom management, where assessment criteria must often be constructed rather than retrieved. Although generative AI (GenAI) is increasingly used in educational assessment, it remains limited in accessing such embedded expertise. A critical question therefore arises: how can expert tacit knowledge be systematically externalized in ways that enhance both AI capability and expert professional learning?

This study proposes CADET (Cognitive Apprenticeship-Driven Expert–AI Dual Training), a structured dialogue framework grounded in cognitive apprenticeship (Collins et al., 1991). CADET conceptualizes GenAI as a novice learner that acquires expert-level assessment knowledge through progressive, dialogue-driven interaction. The framework is being prepared for implementation in an immersive virtual reality (IVR)-based classroom management context, where expert teachers evaluate preservice teachers' responses to simulated disruptive student behaviors in ecologically valid, ill-defined scenarios.

CADET operates through three progressive phases: Modeling–Acquiring, Coaching–Enacting, and Monitoring–Applying, aligned with the cognitive apprenticeship sequence of modeling, coaching, and fading. Across these phases, responsibility gradually shifts from expert-led scaffolding to AI-independent reasoning. Central to the framework is a novel double-transfer mechanism. First, experts externalize tacit evaluative reasoning, enabling GenAI to internalize expert-like decision-making processes. Second, GenAI functions as a cognitive mirror: through structured questioning, it prompts experts to examine and refine their implicit reasoning, a process we term reverse articulation. For example, GenAI may challenge whether a classroom intervention should be judged by its immediate success or by its preservation of instructional flow, thereby eliciting deeper conceptual clarification from the expert.

This reciprocal process reframes expert–AI interaction as a site of mutual and progressive learning. CADET contributes by positioning GenAI not merely as an assessment tool, but as an active participant in knowledge co-construction, while simultaneously supporting experts in making their tacit reasoning more explicit and conceptually coherent. The framework holds particular promise for domains where expert knowledge remains underformalized and difficult to codify. Empirical validation is being planned to examine the conditions under which such dual knowledge transfer can be effectively achieved.

Keywords: Generative AI; Tacit Knowledge; Cognitive Apprenticeship; Teacher Education; Virtual Reality; Assessment

References

Collins, A., Brown, J. S., & Holum, A. (1991). Cognitive apprenticeship: Making thinking visible. American Educator, 15(3), 6–11.

What does AI look like? Students draw the invisible

Judit Hahn[1]

[1]Department of Language and Communication Studies, University of Jyväskylä, Finland

Correspondence: judit.hahn@jyu.fi

Abstract:

As artificial intelligence (AI) becomes increasingly present in higher education, students' perceptions of AI shape how they engage with these technologies. This paper presents a small-scale exploratory study examining how university students visually conceptualise AI through drawings. It aims to identify emerging patterns and their relation to broader digital representations of AI.

The dataset consists of 30 drawings produced by small groups of students in classroom settings, collected with informed consent. The research was conducted at a university in Finland, and the participants were English language majors and minors. Using qualitative visual content analysis, the study combines inductive coding with attention to recurring motifs, symbols, and compositional features (Rose, 2016). The analysis explores how abstract concepts such as intelligence and agency are visually constructed and draw on arts-based methods that critique GenAI technologies (Lupton, 2026).

The findings reveal the dominance of familiar visual patterns: many drawings depict AI as humanoid robots, disembodied brains, or network-like structures, echoing common stock images online. This aligns with research demonstrating that widely used stock images of AI, such as humanoid robots and glowing brains, can reinforce simplified or inaccurate understandings of the technology (Dihal & Duarte, 2023). Such imagery often anthropomorphises AI and presents it as autonomous and futuristic, which obscures its socio-technical nature.

A smaller subset of drawings diverges from these patterns and portrays AI as embedded in everyday contexts or as a collaborative partner in learning and work. Some of these representations also highlight the potential risks and harmful effects of AI technologies. These alternative representations align with perspectives that frame AI as a relational and socio-technical phenomenon rather than purely autonomous (Long & Magerko, 2020).

By visualising students' underlying assumptions and imaginaries, this study contributes to discussions on human–AI collaboration in education. The findings suggest that dominant visual narratives may limit understanding and reinforce narrow conceptions. As a work in progress, the paper invites reflection on methods for analysing visual data and the pedagogical implications of critically engaging with AI imagery in higher education.

Keywords: artificial intelligence, visual representations, student perceptions, visual content analysis

References

Dihal, K., & Duarte, T. (2023). Better images of AI: A guide for users and creators. Leverhulme Centre for the Future of Intelligence and We and AI.

Long, D., & Magerko, B. (2020). What is AI literacy? Competencies and design considerations. Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems, 1–16. https://doi.org/10.1145/3313831.3376727

Lupton, D. (2026). Visualising generative AI with collage. UNSW Sydney and ARC Centre of Excellence for Automated Decision-Making and Society.

Rose, G. (2016). Visual methodologies: An introduction to researching with visual materials (4th ed.). Sage.

AI-Enhanced Digital Environment for Curriculum Renewal

Mojca Suban[1], Petra Dermota[2]

[1] The National Institute of Slovenia, Slovenia; mojca.suban@zrss.si
[2] The National Institute of Slovenia, Slovenia; petra.dermota@zrss.si

Correspondence: Mojca Suban: mojca.suban@zrss.si

Abstract:

Slovenia is currently undergoing a comprehensive curriculum reform, which includes the renewal of subject-specific curricula and the curriculum catalogues across the entire educational system, from primary to upper secondary education. This highly extensive process initially involved more than 1,000 committee members, over 250 revised documents, and nearly 30,000 educational and leadership professionals who will, starting in the 2026/27 school year, gradually begin using the renewed curricular documents for planning and implementing pedagogical work.

This contribution presents the digital support system that accompanied the complex, system-wide renewal process, implemented in two phases:

1. the development phase of the subject-specific curricula and the curriculum catalogues, supported by AI-based tools for curriculum committee members, and
2. the implementation phase, in which the renewed documents are used for planning educational work with integrated AI elements.

During the development phase, an application was established to ensure a unified structure of all curricular documents and the consistent use of terminology. At the same time, an AI assistant supported a key innovation of the reform—common objectives—by enabling autonomous tagging of content and its connections to these objectives, thus assisting the work of curriculum committees. The application then became an external data source for the next phase, when the renewed subject-specific curricula and the curriculum catalogues enter practical use.

The platform represents a comprehensive digital environment for browsing the subject-specific curricula and the curriculum catalogues, planning educational work through annual and detailed lesson plans, as well as planning and analysing assessment. A key component of the platform is artificial intelligence, which—for example, through a multi-layered AI advisor—supports teachers in planning while ensuring that teachers retain their central role in the process.

Keywords: curriculum renewal, digital platform, AI advisor

References

Ahačič, K., Banič, I., Brodnik, A., Holcar, A., Klopčič, P., Kogoj, B., Mithans, M., Panić, N., et al. (2022). *Izhodišča za prenovo učnih načrtov v osnovni šoli in gimnaziji*. Ljubljana: Zavod Republike Slovenije za šolstvo. https://www.zrss.si/pdf/izhodisca_za_prenovo_UN.pdf

Ahačič, K., Banjac, M., Baškarad, S., Belasić, I., Bergoč, Š., Bešter, J., Borota, B., Bratina, K., et al. (2024). *Skupni cilji in njihovo umeščanje v učne načrte in kataloge znanj*. Ljubljana: Zavod Republike Slovenije za šolstvo. https://www.zrss.si/pdf/skupni_cilji.pdf

Baškarad, S., Cotič Pajntar, J., Dolgan, K., Suban, M., Sambolić Beganović, A., Holcar, A. (2025). *Renewal of curricula in Slovenia: challenges, opportunities and ways forward.* CIDREE YEARBOOK 2025 Developing curriculum in and for a changing world: Conducting Curriculum Review. https://www.cidree.org/wp-content/uploads/2025/11/cidree-yearbook-2025.pdf

Sambolić Beganović, A. in Suban, M. (2025). Digitalno podporno okolje kot pomemben element kurikularne prenove in načrtovanja pouka. Vzgoja in izobraževanje, LVI(4-5), 70-77.

Suban, M. in Baškarad, S. (2025). Prenova kurikularnih dokumentov za nove poti do znanja v razredu in zunaj njega. Vzgoja in izobraževanje, LVI(4-5), 48-54.

Designing Group Work with AI for Human Skills, Belonging and Employability in Higher Education

Ksenia Wesolowska[1]

[1]University of Strathclyde, Glasgow, UK; xeniawes@gmail.com

Correspondence: Ksenia Wesolowska: xeniawes@gmail.com

Abstract:

As generative AI becomes embedded in higher education, debate often centres on efficiency, automation, and academic risk. This paper argues that the more AI reshapes educational practice, the more important explicitly human forms of learning become. It takes group work as a particularly revealing case and proposes that teamwork, negotiation, shared responsibility, and relational judgement remain fundamentally human capacities. Students do not acquire these through solitary interaction with AI, but develop them through participation, adjustment, and reflection with other students.

Drawing on faculty-level work on group work guidance, employability framing, online community-building, and collaboration with Careers and Employability Student Services colleagues on how students translate group work experience into interviews, placements, and professional contexts, the paper explores a central pedagogical problem: students often see group work chiefly as a mechanism of assessment, often burdensome, unfair, or frustrating. Staff, meanwhile, may value collaborative learning but struggle to design tasks that are sufficiently purposeful, inclusive, and workplace-relevant, especially in online or blended settings.

The paper argues that AI is useful here at the level of educational design. It can help educators create more structured and meaningful collaborative activities through discipline-relevant scenarios, workplace-style case material, role briefs, staged prompts, and reflective questions that make group processes more visible. Such uses of AI can also help explain to students why group work matters by linking academic collaboration more clearly to teamwork beyond the university.

Three discussion points follow:

- First, AI heightens the importance of collaborative learning because it throws renewed emphasis onto human capacities that cannot be automated.
- Second, resistance to group work often reflects weak framing and poor task design rather than a rejection of collaboration itself.
- Third, human-AI collaboration is pedagogically valuable when it strengthens the conditions in which teamwork, belonging, student agency, and transferable skills can develop with greater clarity and purpose.

The contribution to EDEN's theme is therefore the following: human-AI collaboration should not be judged only by what AI can generate, but by how it helps educators protect and strengthen the forms of learning that remain deeply human. In this view, group work becomes a key site for relational pedagogy, student agency, and employability in an AI era.

Keywords: human-AI collaboration; group work; belonging; employability; relational pedagogy; online community

Renewable assignments in times of AI

Inés Gil-Jaurena[1], Daniel Domínguez-Figaredo[2], Aitor López-González[3], Sergio López-Ronda[4]

[1] Faculty of Education, Universidad Nacional de Educación a Distancia (UNED), Spain; inesgj@edu.uned.es
[2] Faculty of Education, Universidad Nacional de Educación a Distancia (UNED), Spain; ddominguez@edu.uned.es
[3] Faculty of Education, Universidad Nacional de Educación a Distancia (UNED), Spain; aitorlopezgonzalez@edu.uned.es
[4] Faculty of Education, Universidad Nacional de Educación a Distancia (UNED), Spain; slopezr@edu.uned.es

Correspondence: Inés Gil-Jaurena: inesgj@edu.uned.es

Abstract:

Since 2023-24, we develop a teaching innovation project to promote students' active participation and engagement through the design and development of renewable assignments in various distance education courses we teach at the Faculty of Education at the National University of Distance Education (Universidad Nacional de Educación a Distancia - UNED). As open educational practices (OEP) that include active participation and production of knowledge by students (Paskevicius, 2017), `renewable´ assignments are 'assignments which both support an individual student's learning and result in new or improved OER that provide a lasting benefit to the broader community of learners' (Wiley & Hilton, 2018), so students' contributions produce relevant content that has value beyond the student's own learning (Wiley, 2013).

In 2023-24, our first experience with this type of innovative assignment and assessment methods involved the creation of a collaborative online map about community development projects (Gil-Jaurena et al., 2024) in an undergraduate online course, and it showed this task's potential for engaging students as producers and for enriching the course content. In 2024-2025, we converted our traditional or disposable assignments into renewable ones in various distance education undergraduate and postgraduate courses. Specifically, we explored peer assessment in a master course, collaborative glossaries produced by the students in two master courses, and collaborative online maps in an undergraduate course and two master courses. The impact of these experiences in terms of students' engagement and academic achievement, collected via surveys, was positive (Gil-Jaurena, Domínguez, et al., 2025; Gil-Jaurena, López Ronda et al., 2025).

In 2025-26, we further explored the implementation of these renewable assignments, including the use of students produced collaborative maps in other courses or with other cohorts of the same course. Also, we have incorporated a set of questions about generative AI in the students' perceptions survey, under the assumption that this type of assignments –which facilitate collaborative learning in distance education environments, students' engagement and public sharing– can promote a more ethical use of AI as a support tool and prevent its misuse as a replacement tool. In the presentation, we will share our findings and reflections about the use of renewable assignments in times of AI.

Keywords: renewable assignments; engagement; collaborative learning; open educational practice; distance education

References

Gil-Jaurena, I.; Domínguez, D.; Ballesteros, B.; Martínez Ortiz de Zárate, A.; López-Ronda, S. & López-González, A. (2025). Improving Students' Engagement in Distance Education Through Innovative Assignments. In Elena Trepulé (ed.) *EDEN Annual Conference Proceedings: Shaping the Future of Education in the Age of AI: Empowering Inclusion, Innovation and Ethical Growth*. Bologna (Italy), 15-17 June 2025. EDEN Digital Learning Europe (pp. 71-72). https://eden-europe.eu/wp-content/uploads/2025/07/EDEN-2025-AC-Proceedings.pdf

Gil-Jaurena, I.; López-González, A. & Domínguez, D. (2024). Open collaborative map in distance education: an experience with renewable assignments. *EDEN 2024 Research Workshop Proceedings: Emerging Technologies, Challenges and Opportunities in Education and Research*, Timisoara, Romania, 16-18 October 2024 (pp. 1-2). https://eden-europe.eu/wp-content/uploads/2024/11/2024-RW-proceedings_short-papers.pdf

Gil-Jaurena, I.; López-Ronda, S. & Domínguez-Figaredo, D. (2025). From traditional to renewable Assignments in Distance Education: promoting Students' Engagement. In European Association of Distance Teaching Universities (ed). *The Envisioning Report for Empowering Universities. 9th edition* (pp. 43-45). https://doi.org/10.5281/zenodo.15908735

Paskevicius, M. (2017). Conceptualizing Open Educational Practices through the Lens of Constructive Alignment. *Open Praxis, 9*(2), 125–140. http://doi.org/10.5944/openpraxis.9.2.519

Wiley, D. (2013). *What is open pedagogy?* https://opencontent.org/blog/archives/2975

Wiley, D. & Hilton III, J.L. (2018). Defining OER-enabled pedagogy. The International Review of Research in Open and Distributed Learning, 19(4). https://doi.org/10.19173/irrodl.v19i4.3601

"It Must Know Everything": Exploring Secondary School Students' Imaginaries of AI-enhanced Learning

Georg Nöhrer[1], Patrick Koger[2], Elisabeth Anna Günther[3]

[1] University of Vienna, Centre for Teacher Education, Austria; georg.noehrer@univie.ac.at
[2] University of Vienna, Centre for Teacher Education, Austria; patrick.koger@univie.ac.at
[3] University of Vienna, Centre for Teacher Education, Austria; elisabeth.guenther@univie.ac.at

Correspondence: Georg Nöhrer: georg.noehrer@univie.ac.at

Abstract:

AI is becoming increasingly embedded in educational practices (Zou et al., 2025). While current research has largely focused on the general promises and challenges of AI in education (Bond et al., 2024; Vieriu & Petrea, 2025), less attention has been paid to how students, especially younger ones, understand their own roles within these AI-enhanced learning environments. Yet, students play a critical role in how pedagogical relations play out, even as AI increasingly shapes these relations as well as modes of participation (Perrotta, 2024).

Drawing on a sociomaterial perspective, we conceptualize AI-enhanced learning environments as assemblages of human actors, technologies, institutional structures, and practices (Fenwick, 2015; Fenwick & Landri, 2012; Sørensen, 2001). From this perspective, we understand students' imaginaries of AI as ways of making sense of their roles in data-driven education, including how participation and responsibility are configured within such assemblages. Consequently, we ask: How do secondary school students perceive and negotiate their roles within AI-enhanced learning environments? And how can Computational Empowerment (CE) support critical reflection on these sociomaterial assemblages?

This concise paper draws on a series of workshops with 75 students across three secondary schools and presents preliminary findings from an ongoing study. Building on CE (Dindler et al., 2020, 2023) as a participatory design approach, students were invited to imagine and prototype their AI-enhanced ideal learning platforms. The workshops were intended to elicit students' imaginaries of AI integration and to create a space in which they could question and reconfigure their roles within these data-driven learning environments.

Our preliminary findings suggest that students imagine AI mainly as a personalized tutor that supports individual performance. They expect it to explain content, generate exercises to assist with exam preparation, and serve as a central hub for accessing information. Rather than envisioning AI as transforming education, they position it as reinforcing existing school logics of efficiency, task completion, and individual achievement. Students imagine it as an omniscient mediator of knowledge and themselves primarily as dependent users rather than active participants in learning processes. They also attribute social and regulatory functions to AI, such as moderating communication and enforcing rules on their platform. Overall, our findings suggest that students imagine AI not as a tool but as an active participant in the educational assemblage, one that tends to reproduce existing pedagogical and institutional practices. This raises further questions about how responsibility is imagined when AI assumes functions otherwise associated with teachers, and what this means for students' sense of agency and participation. These questions will be discussed in the presentation and explored in the final paper.

Methodologically, CE enabled students to reflect on tensions within AI-enhanced learning environments and revealed how their imaginaries of AI often reproduce dominant school logics. At the same time, CE proved valuable for making these tensions visible. It opened up discussion about the pedagogical and relational dimensions of AI-enhanced education, highlighting its value as a method for researching these environments as sociomaterial assemblages.

Keywords: AI in education; sociomateriality; student imaginaries; Computational Empowerment

References

Bond, M., Khosravi, H., De Laat, M., Bergdahl, N., Negrea, V., Oxley, E., Pham, P., Chong, S. W., & Siemens, G. (2024). A meta systematic review of artificial intelligence in higher education: A call for increased ethics, collaboration, and rigour. International Journal of Educational Technology in Higher Education, 21(1), 4. https://doi.org/10.1186/s41239-023-00436-z

Dindler, C., Iversen, O. S., Hjorth, M., Smith, R. C., & Nielsen, H. D. (2023). DORIT: An analytical model for computational empowerment in K-9 education. International Journal of Child-Computer Interaction, 37, 100599. https://doi.org/10.1016/j.ijcci.2023.100599

Dindler, C., Smith, R., & Iversen, O. S. (2020). Computational empowerment: Participatory design in education. CoDesign, 16(1), 66–80. https://doi.org/10.1080/15710882.2020.1722173

Fenwick, T. (2015). Sociomateriality and Learning: A Critical Approach. In D. Scott & E. Hargreaves, The SAGE Handbook of Learning (S. 83–93). SAGE Publications Ltd. https://doi.org/10.4135/9781473915213.n8

Fenwick, T., & Landri, P. (2012). Materialities, textures and pedagogies: Socio-material assemblages in education. Pedagogy, Culture & Society, 20(1), 1–7. https://doi.org/10.1080/14681366.2012.649421

Perrotta, C. (2024). Plug-and-Play Education: Knowledge and Learning in the Age of Platforms and Artificial Intelligence (1. Aufl.). Routledge. https://doi.org/10.4324/9781003099826

Sørensen, E. (2001). The Materiality of Learning: Technology and Knowledge in Educational Practice (1. Aufl.). Cambridge University Press. https://doi.org/10.1017/CBO9780511576362

Vieriu, A. M., & Petrea, G. (2025). The Impact of Artificial Intelligence (AI) on Students' Academic Development. Education Sciences, 15(3), 343. https://doi.org/10.3390/educsci15030343

Zou, Y., Kuek, F., Feng, W., & Cheng, X. (2025). Digital learning in the 21st century: Trends, challenges, and innovations in technology integration. Frontiers in Education, 10, 1562391. https://doi.org/10.3389/feduc.2025.1562391

AI in Higher Education: Bridging Theory and Practice via Institutional Toolkits

Anna Sánchez-Caballé[1], Maria Ángeles Llopis Nebot[2], Sara Builes[3], Francesc Esteve-Mon[4]

[1234]Universitat Jaume I, Spain; acaballe@uji.es; mallopis@uji.es; sbuils@uji.es; festeve@uji.es

Correspondence: Anna Sánchez-Caballé: acaballe@uji.es

Abstract:

The emergence of artificial intelligence (AI) has transformed teaching, research, and university management. The expansion of large language models has intensified debates regarding pedagogical uses, ethical risks, and regulatory frameworks (Peláez-Sánchez et al., 2024). While AI offers opportunities for personalization and academic support, it poses challenges linked to integrity, data privacy, and bias, necessitating responsible pedagogical strategies (Wu et al., 2024). This study analyzes characteristics of toolkits to support AI adoption, focusing on two: (1) what content is included in these platforms?; and (2) what formats do the available materials present?

From a methodological point of view, this is an exploratory-descriptive investigation, in which the content analysis technique (Krippendorff, 2018) has been used based on primary sources from higher education institution websites, collected in January 2026. As a result of this analysis, nine web platforms or toolkits were identified.
The following table shows the results in relation to the toolkit and its focus of interest:

Table 1. Overview of University AI Toolkits and Their Main Focus.

Web/Toolkit name	University	Country	Main Focus	Link
Library and Learning Services Your Critical AI Toolkit	York St John University	United Kingdom	Digital Literacy and Careers	https://www.yorksj.ac.uk/library/library-study-and-digital-skills/critical-ai-toolkit/
Toolkit for the Ethical Use of GenAI in Learning and Teaching	University College Cork	United Kingdom	Ethics and Academic Integrity	https://www.ucc.ie/en/ethical-use-of-generative-ai-toolkit/
Artificial Intelligence (AI) Toolkit	George Town University	United States of America	Pedagogy and Research	https://cndls.georgetown.edu/resources/ai/
AI Toolkit	University of Lincoln	United Kingdom	Governance, ethics and Productivity	https://digitaleducation.lincoln.ac.uk/resourceshub/ai-toolkit/
Inteligencia Artificial en la universidad	Universidad de Granada	Spain	Institutional recommendations and regulation	https://ceprud.ugr.es/formacion-tic/inteligencia-artificial

✨Toolkit IA: Tu Caja de Herramientas Inteligentes	Universidad de La Sabana	Colombia	Functional Academic Support	https://unisabana.libguides.com/c.php?g=1477282&p=11009778
Uso educativo de la Inteligencia Artificial Generativa	UNED	Spain	Innovation and Continuous Training	https://www.uned.es/universidad/inicio/institucional/areas-direccion/vicerrectorados/innovacion/iaeducativa.html
Teach with Generative AI	Harvard University	United States of America	Pedagogical Reflection and Experimentation	https://www.harvard.edu/ai/teaching-resources/

Regarding formats, text is the predominant medium (n=9). Some platforms incorporate video (n=3) and audio (n=1) through links, while a few include interactive content hosted on the web (n=2).
Results indicate that universities must diversify resources to guide AI use. The analysis reveals a proactive approach integrating ethical, pedagogical, and digital literacy principles. There is a clear need to offer materials alongside strategies for responsible use to guarantee academic integrity and maximize educational benefits.

Acknowledgements

This research was funded by Universitat Jaume I under the project PedagogÍA: Toolkit for the Design and Integration of AI in Teaching–Learning Processes in Higher Education (UJI-2025-05).

Keywords: Artificial Intelligence; Toolkit; Content Analysis; University

---

References

Krippendorff, K. (2018). *Content analysis: an introduction to its methodology.* SAGE. https://doi.org/10.4135/9781071878781

Peláez-Sánchez I.C., Velarde-Camaqui D. & Glasserman-Morales L.D. (2024). The impact of large language models on higher education: exploring the connection between AI and Education 4.0. *Frontiers in Education. Sec. Leadership in Education*, (9) 1-21. https://doi.org/10.3389/feduc.2024.1392091

Wu, Y., Zhang, L. & Carroll, J. (2024). AI Governance in Higher Education: Case Studies of Guidance at Big Ten Universities. Future Internet 2024, 16(10), 354. https://doi.org/10.3390/fi16100354

Beyond Adoption or Resistance: Teachers' Profiles of Generative AI Use

Meital Amzalag[1], Gila Kurtz[2], Omri Hadar[3], Yifat Kolikant[4], Yair Amichai-Hamburger[5]

[1] Holon Institute of Technology, Israel; meitalam@hit.ac.il
[2] Holon Institute of Technology, Israel; gilaku@hit.ac.il
[3] The Hebrew University of Jerusalem, Israel; omri.hadar@mail.huji.ac.il
[4] The Hebrew University of Jerusalem, Israel; yifat.kolikant@mail.huji.ac.il
[5] Reichman University, Israel; yairah@runi.ac.il

Correspondence: Meital Amzalag: meitalam@hit.ac.il

Abstract:

The increasing presence of generative artificial intelligence (GenAI) in schools raises questions regarding how teachers interpret this technology and integrate it into instructional and assessment practices. Existing research has largely adopted variable-centered approaches that examine teachers' intentions to adopt GenAI or their reported levels of use, often treating teachers as a homogeneous group and implying gradual or linear trajectories of integration (e.g., Kong et al., 2024; Yang et al., 2025). Such approaches provide limited insight into heterogeneity of teachers' responses to GenAI and the pedagogical meanings associated with different patterns of use.

This study examines variations among teachers by identifying profiles using cluster analysis based on attitudes toward GenAI, perceived pedagogical benefits, concerns regarding students' use of GenAI, AI-related anxieties, and pedagogical orientations. This analysis is based on survey data collected from January to March 2025, involving 501 Israeli teachers from various educational sectors.

Findings revealed three profiles. The Closed and Skeptical profile (32.1%, n = 161) was characterized by low perceived pedagogical benefit, relatively negative attitudes toward GenAI, elevated concerns regarding students' use, limited use of GenAI, and minimal pedagogical and assessment-related change. The Open but Anxious profile (45.1%, n = 226) combined relatively high perceived benefit and positive attitudes with elevated AI-related anxiety, alongside varying patterns of GenAI use and pedagogical change, job replacement, and AI consciousness. The Open and Confident profile (22.8%, n = 114) was marked by high perceived benefit, strongly positive attitudes, relatively low anxiety, more extensive use of GenAI for instructional, and higher levels of reported pedagogical and assessment-related change.

While teachers in the Open and Confident profile reported active use of GenAI alongside pedagogical change, and those in the Closed and Skeptical profile expressed resistance and limited openness to the technology, the Open but Anxious group represented the profile with the greatest potential for change, as it combined openness toward GenAI with hesitation and concern regarding use. Additional analysis identified three sub-profiles: Implementing Despite Concerns (n = 89), characterized by high levels of GenAI use and pedagogical change alongside elevated anxiety; Cautious Observers (n = 73), characterized by limited use and low levels of pedagogical change; and Anxiety-Constrained Teachers (n = 64), characterized by high anxiety combined with minimal use and limited pedagogical change.

Findings indicate that AI-related anxiety functions as a differentiating factor across teachers' profiles. Similar levels of anxiety were associated with fundamentally different pedagogical patterns, depending on how anxiety intersected with the perceived pedagogical value of GenAI. Sometimes, anxiety was linked to limited use and

minimal pedagogical change, whereas in others, it coexisted with extensive use and substantial instructional and assessment-related change.

The results underscore the need to move beyond one-dimensional adoption indicators and emphasize the importance of differentiated professional development and implementation strategies aligned with distinct teacher profiles, thereby increasing the likelihood of effective and sustainable GenAI integration in schools.

Keywords: Generative AI; Teachers; Cluster Analysis; AI Anxiety

---

References

Kong, S. C., Yang, Y., & Hou, C. (2024). Examining teachers' behavioral intention of using generative artificial intelligence tools for teaching and learning based on the extended technology acceptance model. Computers and Education: Artificial Intelligence, 7, 100328. https://doi.org/10.1016/j.caeai.2024.100328

Yang, Y., Xia, Q., Liu, C., & Chiu, T. K. F. (2025). The impact of TPACK on teachers' willingness to integrate generative artificial intelligence (GenAI): The moderating role of negative emotions and the buffering effects of need satisfaction. Teaching and Teacher Education, 154, 104877. https://doi.org/10.1016/j.tate.2024.104877

A Human-AI Collaboration Framework for Learning, Teaching and Academic Development in Higher Education

Mirjam Hauck[1], Mychelle Pryde[2]

[1 2] The Open University, UK; m.hauck@open.ac.uk; mychelle.pride@open.ac.uk

Correspondence: Mirjam Hauck: m.hauck@open.ac.uk

Abstract:

The rapid integration of generative AI into higher education has created a distinctive institutional challenge: how to develop genuine, critically grounded AI capability across an entire academic workforce including academics, professional services staff and Associate Lecturers, without bypassing legitimate concerns about academic integrity, expertise erosion, equity and pedagogical values. Existing approaches to staff AI development typically default to either enthusiastic adoption training or cautionary awareness sessions. Neither adequately addresses the complexity of the institutional context or the diversity of the staff it seeks to serve.

This paper presents a framework for human-AI collaboration in learning and teaching, synthesised from two complementary theoretical orientations. The first is grounded in Critical AI Literacy (CAIL) and the Responsible by Design (RBD) principles developed at The Open University, which insist on structured scepticism as a precondition for adoption, disciplinary specificity in design, and direct connection between development activity and live curriculum work. The second orientation draws on human-centred service design, foregrounding co-creation, psychological safety, and the recognition that applied AI capability constitutes an essential dimension of academic professionalism for all staff and not only those already positively disposed towards AI.

The resulting framework operates across five interconnected design principles. First, it prioritises psychological safety as the precondition for meaningful human-AI collaboration: staff concerns are acknowledged as legitimate pedagogical starting points before any practical application is introduced, with the consistent message that AI does not replace academic expertise but changes how that expertise is exercised and taught. Second, all development is disciplinary-specific, co-designed with subject leads and tailored to the assessment types, student profiles and institutional contexts of particular discipline clusters. Third, capability is distributed through peer and community leadership including AI Academic Leads, Champions networks, communities of practice, AI festivals, promptathons and an AI Exploratorium, rather than imposed through top-down mandates. Fourth, development time is productive time: every strand connects to a live module review, an assessment redesign or a feedback process, producing tangible curriculum outputs through the RBD Framework rather than abstract awareness. Fifth, progress is made visible through an AI Learning, Teaching and Assessment Pedagogical Use Tracker and a termly performance dashboard reported to Academic Board, with AI leadership development for Deans and Heads of School embedded at governance level.

The three-layer implementation architecture which comprises Governance, Capability, Curriculum and Outcomes, aligns institutional policy to UK Office for Students B3 conditions, captures practice through the pedagogical tracker, and monitors student continuation, completion and progression as primary indicators of framework impact. A rich performance dashboard adds measures of staff confidence, assessment redesign rates, academic integrity trends, assessment turnaround times and NSS teaching and feedback metrics, providing a holistic and continuously evaluated picture of adoption.

Drawing on the FAIESTA (Festival of AI Exploration and Strategies in Teaching and Assessment) model developed at The Open University, this paper offers a theoretically grounded, practically tested framework that is simultaneously critical, inclusive and scalable. It contributes to the emerging field of institutional AI pedagogy by demonstrating how skepticism and adoption are not opposed positions but sequential conditions, and by insisting that the endpoint of human-AI collaboration in learning and teaching is not confident use, but improved outcomes for a diverse student body in an AI-enabled world.

Keywords: human-AI collaboration, critical AI literacy, academic staff development, responsible by design, generative AI in higher education, pedagogical framework

Before Technology: A Trust-Centred Postdigital Framework for Human–AI Pedagogy in Higher Education

Zeta Dooly[1], Daithi O'Murchu[2]

[1]South East Technological University, Ireland; zeta.dooly@setu.ie
[2]Independent consultant, Dublin, Ireland

Correspondence: Zeta Dooly: zeta.dooly@setu.ie

Abstract:

The accelerating integration of artificial intelligence and immersive technologies into higher education has intensified longstanding questions concerning the relationship between pedagogy, technology, and human values. This paper argues that meaningful digital transformation is not achieved through technological adoption alone, but through a deliberate reorientation towards what both precedes and exceeds technology: trust, human relationships, epistemic integrity, and authentic engagement. Positioned within the postdigital perspective articulated by Tim Fawns, education is conceptualised here as an entangled ecology of social, material, and technological practices, rather than a domain driven by technological determinism.

Responding to the emergence of agentic artificial intelligence—systems capable of autonomous decision-making, adaptive support, and generative knowledge production, this paper examines the implications for authorship, learner agency, assessment validity, and the evolving role of the educator. While such systems offer unprecedented opportunities for personalisation and scale, they also expose critical tensions within existing pedagogical models, particularly where efficiency-driven approaches risk displacing meaning, relationality, and critical engagement.

To address these challenges, the paper proposes a Trust-Centred Postdigital Pedagogy (TCPDP) framework, a values-led model for human–AI collaboration grounded in six interdependent dimensions: trust, relational engagement, knowledge co-creation, playfulness, active participation, and an ethic of care (conceptualised as a rigorous commitment to inclusion, learner growth, and human flourishing). This framework is developed through a practice-based, design-informed approach, drawing on the implementation of XR-enhanced learning environments within higher education curricula aligned to the United Nations Sustainable Development Goals.

Empirical illustrations from these implementations demonstrate how immersive and AI-augmented pedagogies can support transformative, experiential, and socially relevant learning. Within this approach, technology is not positioned as the innovation itself, but as an enabling layer that amplifies human-centred pedagogical design. Examples include XR-supported experiential scenarios, participatory learning architectures, and digitally mediated credentialing systems that connect disciplinary knowledge with real-world challenges.

The paper argues that the central challenge for higher education is not the integration of emerging technologies per se, but the development of critically informed pedagogical practices capable of navigating the entangled relationship between human and non-human actors. This necessitates a shift towards reflexive, context-sensitive design approaches that prioritise trust, meaning-making, and human flourishing alongside technological advancement.

The paper concludes with critical provocations for the sector: How can trust be operationalised within AI-mediated learning environments? What constitutes authentic knowledge and valid assessment when learning is co-produced with intelligent systems? And how might higher education sustain curiosity, creativity, and joy in an era increasingly shaped by agentic technologies?

Keywords: Trust; Postdigital Pedagogy; Human–AI Collaboration; Agentic AI; Experiential Learning; XR Learning; Transformative Education

References

Bali, M., & Zamora, M. (2022). Intentionally Equitable Hospitality as critical instructional design. *Designing for Care*.

Biggs, J. and Tang, C., 2015. Constructive alignment: An outcomes-based approach to teaching anatomy. In *Teaching anatomy* (pp. 31-38). Springer, Cham.

Burt, R. S. (1995). *Structural holes: The social structure of competition*. Harvard university press.

CAST, accessed online May, 2022, Universal Design for Learning Framework, https://www.cast.org/impact/universal-design-for-learning-udl

Garrison, D. R. *E-Learning in the 21st Century*. 3rd. Abingdon, Oxon: Routledge, 2017. Community of inquiry model and 2008 social presence

Holmes, W., Bialik, M. and Fadel, C. (2019) *Artificial intelligence in education: Promises and implicationsfor teaching and learning,* Center for Curriculum Redesign Boston, MA.

Humble, N. and Mozelius, P. (2019) 'Artificial Intelligence in Education - a Promise, a Threat or a Hype?'European Conference on the Impact of Artificial Intelligence and Robotics, Oxford, UK, Oct.

Kim, B. (2001). Social constructivism. *Emerging perspectives on learning, teaching, and technology*, *1*(1), 16.

Groff, J., 2013. Technology-rich innovative learning environments. *OCED CERI Innovative Learning Environment project*, *2013*, pp.1-30.

Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2014). Experiential learning theory: Previous research and new directions. In *Perspectives on thinking, learning, and cognitive styles* (pp. 227-248). Routledge.

Maughan, D., Balenson, D., Lindqvist, U., & Tudor, Z. (2013). Crossing the" Valley of Death": Transitioning cybersecurity research into practice. IEEE Security & Privacy, 11(2), 14-23.

Nemorin, S., Vlachidis, A., Ayerakwa, H. M., & Andriotis, P. (2023). AI hyped? A horizon scan of discourse on artificial intelligence in education (AIED) and development. *Learning, Media and Technology*, *48*(1), 38-51.

Rose, D. H., & Meyer, A. (2002). *Teaching every student in the digital age: Universal design for learning*. Association for Supervision and Curriculum Development, 1703 N. Beauregard St., Alexandria, VA 22311-1714

Wang, Y. D. (2014). Building student trust in online learning environments. *Distance Education*, *35*(3), 345-359.

Immersed and Connected: A Transatlantic Project on AI-Enabled Virtual Reality for Skills Development

Geraldine McDermott[1], Lorraine Daly[2], Catherine Carty[3], Ryan Mann[4], Jojo Hsu-O'Connor[5], Sarah Scott[6]

[1] Technological University of the Shannon, Ireland; geraldine.mcdermott@tus.ie
[2] Technological University of the Shannon, Ireland; geraldine.mcdermott@tus.ie
[3] Technological University of the Shannon, Ireland; catherine.carty@tus.ie
[4] South Alberta Institute of Technology, Canada; ryan.mann@sait.ca
[5] South Alberta Institute of Technology, Canada; Jojo.Hsu-O'Connor@sait.ca
[6] South Alberta Institute of Technology, Canada; sarah.scott@sait.ca

Correspondence: Geraldine McDermott: geraldine.mcdermott@tus.ie

Abstract:

Higher Education (HE) graduates are expected to demonstrate strong communication skills and apply them with confidence in high-pressure, real-world situations. Immersive learning platforms offer students opportunities to address knowledge or skills gaps, allowing them to make mistakes in a low-stakes, safe environment and receive feedback on their verbal and non-verbal engagement.

This paper focuses on a funded action research project between two higher education institutions from different countries, examining how immersive technologies, specifically AI-enabled virtual reality (VR), can enhance the development of communication skills. Guided by the project mentors, academic leads worked with students across iterative research cycles, using student feedback to refine the design of the VR-based learning experience.

The project is informed by key literature in immersive pedagogy. Queiroz et al. (2025) highlights that virtual reality provides authentic, immersive learning simulations that increase emotional and behavioural engagement in communication skills training. Helle et al. (2023) explored the use of virtual reality for individual learning amongst health and social care students, concluding that VR has significant potential to enhance professional competencies. Shorey et al. (2020) explored the potential of virtual reality to develop nursing students' communication skills, concluding that VR enhanced students' confidence and preparedness for clinical performance. However, this study also noted that challenges were associated with poor speech recognition and conversational flow, which affected students' overall experience. These considerations were particularly important for the present study. Additionally, identifying where immersive VR learning experiences fit within the curriculum was a key factor in promoting student engagement (McDermott et al., 2024).

Findings suggest that carefully aligning immersive learning pathways with core competencies, combined with iterative, student-informed design, can meaningfully enhance learner confidence and engagement. This paper discusses the implications for educators seeking to embed human-AI collaboration tools into HE curricula and reflects on the opportunities and challenges of conducting immersive learning research within an international institutional partnership.

Keywords: immersive pedagogy, virtual reality, transnational research, communication skills

References

Helle, N., Vikman, M. D., Dahl-Michelsen, T., & Lie, S. S. (2023). Health Care and Social Work Students' Experiences With a Virtual Reality Simulation Learning Activity: Qualitative Study. JMIR medical education, 9, e49372. https://doi.org/10.2196/49372

Queiroz, A. C., Bailenson, J. N., Blair, K. P., Schwartz, D. L., Thille, C., & Wagner, A. D. (2025). Self-Review And Feedback In Virtual Reality Dialogues Increase Language Markers of Personal And Emotional Expression In An Empathetic Communication Training Experience. Computers & Education: X Reality, 7, 100108.

McDermott, G. (Ed.). (2024). Getting started with immersive technologies in higher education. Technological University of the Shannon: Midlands Midwest. https://tus.pressbooks.pub/immersivetechnologies/

Shorey, S., Ang, E., Ng, E. D., Yap, J., Lau, L. S. T., & Chui, C. K. (2020). Communication skills training using virtual reality: A descriptive qualitative study. Nurse education today, 94, 104592.

From Concept to Campus: Overcoming Real-World Barriers to Introducing a Social Robot for Student Support in Higher Education

Geraldine McDermott[1], Karol Fitzgerald[2], Geraldine Maughan[3]

[123]Technological University of the Shannon, Ireland; geraldine.mcdermott@tus.ie

Correspondence: Geraldine McDermott: geraldine.mcdermott@tus.ie

Abstract:

Third-level education presents ongoing challenges for students with additional needs, including neurodivergence, anxiety, and barriers to engagement. While social robotics has been widely explored as a potential support mechanism (Youssef et al, 2023), much of the existing literature focuses on controlled environments, short-term interventions, or theoretical applications (see Tozadore & Romero, 2024; Tisza et al, 2025).

This paper presents a practical case study of deploying a social robot (Buddy©) within a higher education setting, highlighting the gap between conceptual promise and real-world implementation.

Initial research explored student perceptions of social robots as tools for supporting learning and well-being. However, delays in hardware acquisition and significant challenges in system integration, including device configuration, platform compatibility, and remote connectivity—shifted the project's focus to understanding the technical, organisational, and user-experience barriers to deploying such systems in practice.

This study documents the process of overcoming these challenges, including integrating third-party communication platforms, configuring robotic operating systems, and developing workflows to enable meaningful student interaction.

Findings combine previously unreported student perception data, insights from on-campus deployment and interaction, and a critical analysis of technical and infrastructure barriers.

The paper argues that the successful adoption of social robotics in higher education depends not only on its pedagogical value but also on institutional readiness, robust deployment frameworks, and interdisciplinary collaboration.

This work contributes a practical roadmap for researchers and institutions, moving the discourse from experimental potential toward sustainable, real-world implementation

Keywords: social robotics, AI-enabled student support, higher education, student wellbeing

References

Tisza, G., Markopoulos, P., Serholt, S., Nasir, J., Mubin, O., Tapus, A., … Barakova, E. I. (2025). Generative AI-powered social robots in education: opportunities and challenges from a Delphi study. *Behaviour & Information Technology*, 1–23. https://doi.org/10.1080/0144929X.2025.2604060

Tozadore D.C. and Romero R.A.F. (2024) Multiuser design of an architecture for social robots in education: teachers, students, and researchers' perspectives. *Frontiers in Robotics and AI*. 11:1409671. doi: 10.3389/frobt.2024.1409671

Youssef, K., Said, S., Alkork, S., & Beyrouthy, T. (2023). Social robotics in education: A survey on recent studies and applications. *International Journal of Emerging Technologies in Learning (Online)*, *18*(3), 67.

Designing sustainable AI literacy for teachers: A capacity-building approach

Mildrid Kyte[1], Scarlet Coopman[2], Jon Øivind Hoem[3], Katerina Todorova[4], Erman Uzun[5], Carl Boel[6]

[1] Department of Sports, Food and Natural Sciences, Faculty of Education, Arts and Sports, Western Norway University of Applied Sciences, Norway; mildrid.kyte@hvl.no,
[2] d-teach, Belgium; scarlet.coopman@d-teach.com
[3]Department of Arts Education, Faculty of Education, Arts and Sports, Western Norway University of Applied Sciences, Norway; jon.hoem@hvl.no
[4] Private Pädagogische Hochschule Augustinum, Austria; katerina.todorova@pph-augustinum.at
[5] Department of Computer Education and Instructional Technologies, Faculty of Education, Mersin Üniversitesi, Turkey; ermanuzun@mersin.edu.tr
[6]Research group Educational Technology, Katholieke Hogeschool Vives-Zuid, Belgium; carl.boel@vives.be

Correspondence: Mildrid Kyte: mildrid.kyte@hvl.no

Abstract:

As artificial intelligence (AI) becomes increasingly embedded in educational practice, teachers need systematic support to develop pedagogically, ethically, and professionally sound forms of human–AI collaboration. This paper reports on the methodological design and development process of a capacity-building programme developed within AI-teach - Enhancing Teachers' AI Literacy, an Erasmus+ Teacher Academy. The project adopts a collaborative, European approach to designing teacher education for AI that is evidence-informed, flexible, and context sensitive.

The AI-teach programme comprises a 20 ECTS modular structure organised into three interrelated content portfolios: Learning about AI, Learning with AI, and Using AI to learn about learning. These portfolios function as an organising framework rather than a curriculum prescription and are theoretically grounded in established perspectives on AI in education (Holmes et al., 2022), DigCompEdu (2017), and UNESCO's Recommendations on the Ethics of Artificial Intelligence (2022).

The development method is grounded in educational design research (EDR) and proceeds through iterative cycles of needs analysis, co-design, piloting, evaluation, and revision (McKenney & Reeves, 2018). A large-scale state-of-the-art mapping of AI in teacher education provides the empirical basis for initial design decisions, informing topic selection, learning outcomes, and exemplar practices to ensure relevance to teachers' real-world contexts (Van Schoors et al., 2025).

The methodological development of the content portfolio is described through a three-stage process for producing sustainable, competency-aligned learning modules. Stage 1 focuses on strategic content decisions, where development teams define module scope, learning outcomes, and practice-based examples based on empirical evidence and partner contexts. Stage 2 involves the systematic authoring of constructively aligned module scripts using shared templates, learning design principles, and technical standards to ensure pedagogical coherence and production feasibility. Stage 3 centres on coherence and alignment across modules, in which modules are systematically mapped to DigCompEdu competence areas, empirical evidence sources, and interoperability requirements to support reuse and integration across institutional learning environments.

Content portfolio development validation is conducted through pilot testing with pre-service teachers, in-service teachers, and teacher educators, generating mixed quantitative and qualitative data on usability, relevance, and

constructive alignment. By adopting this methodological approach to content portfolio development, we produce pedagogically robust, context-aware, and interoperable AI-focused modules, demonstrating a systematic and transferable development method for AI-related teacher education.

By foregrounding development processes, AI-teach contributes a transferable, evidence-informed methodological model for designing teacher education on AI, supporting both individual competence development and institutional capacity building.

Keywords: AI, capacity building, teachers, educational design research

References

Holmes, W., Persson, J., Chounta, I.-A., Wasson, B., & Dimitrova, V. (2022). *Artificial intelligence and education: A critical view through the lens of human rights, democracy and the rule of law*. Council of Europe.

McKenney, S., & Reeves, T. (2018). *Conducting educational design research* (2nd edn). Routledge. https://doi.org/10.4324/9781315105642

Redecker, C. (2017). *European framework for the digital competence of educators: DigCompEdu*. JRC Publications Repository. https://doi.org/10.2760/178382

UNESCO. (2022). *Recommendation on the ethics of artificial intelligence*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000381137/PDF/381137eng.pdf.multi

Van Schoors, R., Decock, M., Windey, I., Costache, O., Radaczyńska, A., Coetsier, N., Dick-Bursztyn, M., Steffensen, L., Instefjord, E., & Todorova, K. (2025). *AI-teach mapping insights*. https://osf.io/cnu34/overview

Competence Without Enactment: Pedagogical Firewalls in AI Use

Maayan Shay Sayag[1], Ina Blau[2], Orit Avidov-Ungar[3]

[1] Department of Education and Psychology, The Open University of Israel, Israel; Maayan.sayag@gmail.com
[2] Department of Education and Psychology, The Open University of Israel, Israel; inabl@openu.ac.il
[3] Department of Education, Achva Academic College, Israel; oritav65@gmail.com

Correspondence: Maayan Shay Sayag: Maayan.sayag@gmail.com

Abstract:

This research challenges the prevailing assumption that teachers' technical competence with Generative AI (GenAI) naturally leads to student adoption. While educators are rapidly adopting GenAI for administrative efficiency and lesson planning, the transition to allowing students to co-create with these tools remains sluggish. This study investigates this critical tension through the lens of a **"Pedagogical Firewall"**, a mechanism by which teachers utilize their agency to protect traditional learning hierarchies from the perceived disruptions of AI. Recent frameworks, such as the DigCompEdu AI Supplement (Bekiaridis & Attwell, 2024), emphasize that competence must evolve from personal use to empowering learners; however, our findings suggest this evolution is not linear.

Drawing on a longitudinal mixed-methods study of 20 high school teachers over six months post-training, we analyzed 181 educational activities using the SAMR model (Puentedura, 2006). We identified a distinct archetype termed **"The Consolidators".** These teachers demonstrated high technical proficiency (DigCompEdu B1/B2 levels), effectively using GenAI to generate rubrics and exams. Yet, a paradox emerged: while their technical sophistication in *teacher-facing* tasks grew by **22%**, their implementation of *student-facing* AI activities changed by a negligible **1%**.

This discrepancy defines the Pedagogical Firewall. It is not a barrier of ignorance, but of choice. Qualitative analysis reveals that these teachers view GenAI as a "competitor" to student cognition rather than a partner, effectively declaring: "AI is a tool for *me* to teach better, not a partner for *you* to learn with" (T14). This aligns with recent findings that external and institutional factors account for a significant portion of digital competence development (Flores & Chiappe, 2025), suggesting that without an ecosystem of trust, teachers revert to protective gatekeeping.

To move "Beyond Technology" towards true collaboration, institutions must recognize that technical training alone will not dissolve these firewalls. Capacity-building models must pivot from focusing on "AI tools for efficiency" to "AI pedagogies for partnership", supporting teachers in redefining their role from knowledge deliverers to mentors of human-AI co-creation.

Keywords: Pedagogical Firewall, Human-AI Collaboration, Teacher Agency, AI Ethics, Teacher Archetypes, SAMR.

References

Bekiaridis, G., & Attwell, G. (2024). *Supplement to the DigCompEDU framework: Outlining the skills and competences of educators related to AI in education*. University of Bremen, Institute Technology and Education. https://doi.org/10.26092/elib/2708

Flores, W., & Chiappe, A. (2025). Integrating AI into education: Preparation factors and teachers' digital competencies. *Revista Colombiana de Educación, 97*, Article e20825. https://doi.org/10.17227/rce.num97-20825

Puentedura, R. R. (2006). *Transformation, technology, and education*. http://hippasus.com/resources/tte/

Redecker, C. (2017). *European framework for the digital competence of educators: DigCompEdu* (Y. Punie, Ed.). Publications Office of the European Union. https://doi.org/10.2760/159770

“I hadn't thought of that": ChatGPT for writing materials and English teachers’ cognition enrichment

Maria Laura Ferroglio[1]

[1]Department of Foreign Languages, Literatures and Modern Cultures, University of Turin, Italy; marialaura.ferroglio@unito.it

Correspondence: Maria Laura Ferroglio: marialaura.ferroglio@unito.it

Abstract:

Materials development in ELT (English Language Teaching) has been informed by research in Second Language Acquisition and Applied Linguistics, identifying authenticity, meaning, communication, scaffolding and collaboration as core characteristics of effective materials (Tomlinson, 2011). The emergence of generative AI tools, however, complicates these principles: what counts as effective might be challenged, and new questions emerge about how materials are chosen, developed and adapted in context. Besides, considering tensions between researched principles and situated teaching practice, it may be plausible to frame generative AI tools as either disruptors of existing practices or catalysts for integration (Moorhouse et al., 2024; Law, 2024; Barrot, 2023; Byrne, 2025).

Research on generative AI chatbots in writing pedagogy has identified potential affordances such as supporting process writing, providing detailed and accurate feedback, and personalised guidance. Critical points such as biased or inaccurate output content, plagiarism issues and overreliance on tools’ processing capabilities have also been raised (Ahn et al., 2024; Law, 2024; Pack & Maloney, 2023; Moorhouse et al., 2024; Li et al., 2024; Creely et al., 2025). While prompt engineering has been proposed as a way of improving output quality (Bender, 2024; Dornburg & Davin, 2024; Wünsch-Nagy, 2025), less attention has been paid to the role of teacher cognition (Borg, 2003) in shaping how educators interpret, evaluate, and adapt AI-generated materials for their own learners and settings.

Educators’ sets of beliefs ultimately impact decision-making, including choosing materials and adapting them to specific classroom contexts. In scenarios where generative AI tools are present as either teaching assistants or co-creators of materials, the role of teacher cognition in the interaction between human educators and synthetic agents is vital to limit bias and adapt AI-generated materials to culturally specific pedagogical needs and situated institutional contexts.

The paper presents emerging insights into how teachers use generative AI to reflect on, adapt, or sometimes reconsider their approaches to teaching writing. It shows how interaction with ChatGPT can both support materials design and prompt greater awareness of teachers’ own beliefs, agency, and decision-making processes. In the context of rapid technological change, the study highlights the importance of starting from teachers’ expertise and situated pedagogical principles when integrating AI into language education.

The project investigates teachers’ knowledge of the use of ChatGPT for developing writing materials, their engagement with the tool, and how this interaction influences their pedagogical thinking and beliefs about language teaching. Data from twelve reflective workshops, six semi-structured interviews and scripts of ChatGPT interactions from six upper secondary school English teachers in different schools in the Turin and Milan areas in Italy are analysed through Thematic Analysis to capture the patterns within these dimensions.

In current educational scenarios, characterised by complexity and rapid changes, and rising concerns about how educators’ role will change with Generative AI in the game, it is vital that research addresses their perspectives and

expertise as the starting point for responsible generative AI integration.

Keywords: English Language Teaching, writing skills, human-AI interaction, teacher cognition, materials development, materials adaptation

References

Ahn, J., Lee, J., & Son, M. (2024). ChatGPT in ELT: Disruptor? Or Well-Trained Teaching Assistant? ELT Journal, 78(3), 345–355.

Barrot, J. (2023). Using ChatGPT for second language writing: Pitfalls and potentials. Assessing writing,57(100745).

Bender, S. M. (2024). Awareness of Artificial Intelligence as an Essential Digital Literacy: ChatGPT and Gen-AI in the Classroom. Changing English: Studies in Culture and Education, 31(2), 161–174.

Borg, S. (2003). Teacher cognition in language teaching: A review of research on what language teachers think, know, believe, and do. Language teaching, 36(2), 81-109

Byrne, J. (2025). L2 Artificial Immersion: Piloting the Layered Language-Learning Method. Ubiquitous Learning, 18(1), 183–199. https://doi.org/10.18848/1835-9795/CGP/v18i01/183-199

Creely, E., Barnes, M., Tour, E., Henderson, M., Waterhouse, P., Pena, M. A., & Patel, S. V. (2025). Exploring attitudes to generative AI in education for English as an additional language (EAL) adult learners. ReCALL, 1–17. https://doi.org/10.1017/S0958344024000314

Dornburg, A., & Davin, K. J. (2024). ChatGPT in foreign language lesson plan creation:

Trends, variability, and historical biases. ReCALL. https://doi.org/10.1017/S0958344024000035

Law, L. (2024). Application of generative artificial intelligence (GenAI) in language teaching and learning: A scoping literature review. Computers and education open, 6, 100174.

Li, B., Lowell, V. L., Wang, C., & Li, X. (2024). A systematic review of the first year of publications on ChatGPT and language education: Examining research on ChatGPT's use in language learning and teaching. Computers and Education: Artificial Intelligence, 7, 100266. https://doi.org/10.1016/j.caeai.2024.100266

Moorhouse, B. L., Wan, Y., Wu, C., Kohnke, L., Ho, T. Y., & Kwong, T. (2024). Developing language teachers' professional generative AI competence: An intervention study in an initial language teacher education course. System, 125, 103399. https://doi.org/10.1016/j.system.2024.103399

Pack, A., & Maloney, J. (2023). Potential Affordances of Generative AI in Language Education: Demonstrations and an Evaluative Framework. Teaching English with Technology, 23(2), 4–24.

Tomlinson, B. (Ed.). (2013). Developing materials for language teaching. Bloomsbury Publishing Plc.

Wünsch-Nagy, N. (2025). From multimodal space to digital multimodal text: Making choices in digital multimodal compositions inspired by museum visits in higher education. Computers and Composition, 75, 102909. https://doi.org/10.1016/j.compcom.2024.102909

Augment, don't automate: An evidence-based workflow for human-GenAI collaboration in exam question generation

Remco Jongkind[1], Sarah Otto[1], Inayah Hodzic[1], Myrthe Heikens[1], Lodewijk Pet[2], Floor van der Steijle[1], Tom Broens[1]

[1] Teaching & Learning Centre - Amsterdam UMC, University of Amsterdam, Amsterdam Public Health Institute, the Netherlands; r.c.jongkind@amsterdamumc.nl
[2] Department of Clinical Epidemiology, Leiden University Medical Centre, Leiden, The Netherlands; r.c.jongkind@amsterdamumc.nl

Correspondence: Remco Jongkind: r.c.jongkind@amsterdamumc.nl

Higher education faces profound structural tension driven by the massification of student cohorts and stagnating resources (Noui, 2020; OECD, 2025). This dichotomy challenges medical education's core mandate: certifying clinical competence while providing sufficient practice material for students (Schuwirth & van der Vleuten, 2020). Creating high-quality Multiple-Choice Questions (MCQs) is a highly resource-intensive endeavor, demanding immense financial and faculty opportunity costs (NASEM, 2022).

This study investigates the technical capability and ecological validity of using Large Language Models (LLMs) for undergraduate medical MCQ generation. Moving beyond lab-based reviews, we conducted controlled implementation at the University of Amsterdam Faculty of Medicine. Our GenAI-question generator was iteratively developed (Indran et al., 2024) to ensure strict curriculum alignment, question quality, and adherence to Bloom's taxonomy. Generated MCQs underwent expert peer review following the faculty's standard "four-eyes principle." Ultimately, 30% of the raw GenAI output was deemed directly suitable for high-stakes assessment.

We evaluated a high-stakes physiology exam taken by 721 second-year medicine students, containing 29 human-authored and 5 GenAI-authored MCQs (targeting "remember" and "understand" levels of Bloom). Students were blinded to question origins. The results reveal a distinct psychometric signature for GenAI items:

- **Difficulty:** Both formats fell within the optimum difficulty reference range (p-value 0.44–0.90). GenAI MCQs were slightly easier (mean Difficulty Index 0.83 vs. 0.78), though not statistically different.
- **Discrimination:** GenAI items exhibited a significantly higher Discrimination Index than human-authored items (0.392 vs. 0.283, p=0.046). Bordering the literature threshold for "high discrimination" (0.40), GenAI items effectively stratified high- and low-performing students.
- **Acceptability:** GenAI MCQs received zero post-exam objections, significantly lower than the human-authored mean of 0.68 objections per question (p=0.044).
- **Detectability:** Independent subject matter experts and students achieved a 45% true positive rate when attempting to identify GenAI questions.

Despite these highly positive psychometrics, the 30% usability rate underscores a caveat: this tool is not (yet) suitable for unmediated student self-assessment. Bypassing human oversight exposes learners to subtle factual hallucinations and suboptimal formulation. However, when mediated by faculty, the technology proves highly advantageous. Lecturers reported time savings and praised GenAI for producing creative questions, overcoming

years of repetitive drafting fatigue. This high-volume creativity makes the tool exceptionally suited for rapidly scaling formative and summative question banks.

To operationalize these findings, we propose a "Hybrid Assessment Model." Rejecting fully automated assessment, GenAI instead serves as a high-volume generator, shifting the faculty role from primary "writer" to critical "editor." This Human-in-the-Loop workflow leverages GenAI's scale while experts inject clinical nuance, safeguarding academic integrity.

This presentation provides a concrete blueprint for human-AI assessment collaboration. Attendees will leave equipped with:

- **Architectural frameworks:** Specific prompt engineering strategies for MCQs.
- **Empirical evidence:** Detailed breakdowns of psychometric results.
- **Workflow design principles:** A roadmap for safely transitioning faculty to AI "editors."
- **Actionable tools:** An evidence based checklist for evaluating GenAI-generated exam questions on form and content.

Keywords: Generative AI, Multiple-Choice Questions, Assessment, human-in-the-loop

---

References

Artsi, Y., Sorin, V., Konen, E., Glicksberg, B. S., Nadkarni, G., & Klang, E. (2024). Large language models for generating medical examinations: systematic review. *BMC Medical Education*, *24*(1), 354.

Indran, I. R., Paranthaman, P., Gupta, N., & Mustafa, N. (2024). Twelve tips to leverage AI for efficient and effective medical question generation: A guide for educators using Chat GPT. *Medical Teacher*, *46*(8), 1021–1026.

Law, A. K. K., So, J., Lui, C. T., Choi, Y. F., Cheung, K. H., Hung, K. K., & Graham, C. A. (2025). AI versus human-generated multiple-choice questions for medical education: a cohort study in a high-stakes examination. *BMC Medical Education*, *25*. https://doi.org/10.1186/s12909-025-06796-6

National Academies of Sciences, Engineering, and Medicine. (2022). *A pragmatic future for NAEP: Containing costs and updating technologies*. The National Academies Press.

Noui, R. (2020). Higher education between massification and quality. *Higher Education Evaluation and Development*, *14*(2), 93–103. https://doi.org/10.1108/HEED-04-2020-0008

OECD. (2025). *The Financial Sustainability of Higher Education: Insights from Policy in OECD Countries*. https://doi.org/10.1787/f544ccfe-en

Schuwirth, L. W. T., & van der Vleuten, C. P. M. (2020). A history of assessment in medical education. *Advances in Health Sciences Education*, *25*(5), 1045–1056.

"It's Over. You Cannot Beat AI": Educator Framing of Student AI Use in Online Teaching Communities

Paula Raţiu[1]

[1] Department of Communication, Public Relations and Advertising, Faculty of Political, Administrative and Communication Sciences, Babeş-Bolyai University, Romania; paularatiu17@gmail.com

Correspondence: Paula Raţiu: paularatiu17@gmail.com

Abstract:

The rapid integration of AI tools in higher education has fundamentally affected established teaching practices, forcing educators to reevaluate and renegotiate their professional roles. While the response to AI from institutions and industries has been widely discussed, the discourse around the struggles faced by educators and around the ways in which they try to make sense of these disruptions could benefit from more exploration. This paper examines how professors frame the challenges raised by student AI use, aiming to reveal, through online community discourse, deeper tensions at the intersection of professional identity, ethics and mediatized educational practice.

This study is based on three communicating theoretical perspectives. Entman's framing theory represents the main analytical lens, understanding framing as selecting and emphasizing aspects of perceived reality to focus on certain problem definitions, causal interpretations and moral evaluations. The mediatization of education, understood through Hjarvard's framework and Couldry & Hepp's elaboration of deep mediatization, clarifies how digital platforms shape the conditions under which professional discourse emerges and travels. Professional identity theory, mainly relying on Beijaard's approach, connects the educators' response to student AI use with their sense of professional self.

Methodologically, this study uses qualitative discourse analysis of spontaneous online professional discourse, avoiding the social desirability bias associated with interviews or surveys. Data were collected from the Reddit community r/Professors through purposeful sampling based on search visibility, selecting the five most notable threads returned by a targeted Google search, all posted between 2025 and 2026. The top ten upvoted substantial comments from each thread, defined as responses of minimum two sentences and forming a corpus of fifty comments, were analyzed in an inductive manner.

Preliminary examination reveals three dominant frames. The first is helplessness and institutional abandonment frame, professors navigating AI challenges as isolated individuals or groups, receiving neither guidance nor support from their institutions. The second is a nostalgic resistance frame, in which educators are drawn to pre-digital teaching practices such as handwritten assignments and oral examinations, revealing deep uncertainty about evaluation in the age of AI. The third is professional erosion and loss of trust frame, exposing a drastic decrease in students' work, a sense of wasted professional efforts, and a great psychological and emotional toll. An important finding is the lack of comments mentioning institutional support, suggesting adaptation is perceived as entirely individual, a result which could be significant for educational policy and faculty wellbeing.

This study contributes to literature concentrating on educators' perspective on AI, providing insight into the authentic educator experience by analyzing naturally occurring online discourse within teaching communities. The findings underline an urgent need for systemic support frameworks rather than reliance on individual resources. For the broader public, the discourse reflects a general cultural negotiation about the purposes of education and the future of the teacher-student relationship. The current exploration covers a research angle which allows other lenses

to be added and viewpoints to be approached across institutional and cultural contexts, the roles and realities of educators continuing to adapt to societal and technological shifts.

Keywords: framing theory, educator professional identity, artificial intelligence in higher education, online community discourse, mediatization, teacher role transformation

References

Beijaard, D., Meijer, P.C., & Verloop, N. (2004). Reconsidering research on teachers' professional identity. *Teaching and Teacher Education*, 20(2), 107-128. https://doi.org/10.1016/j.tate.2003.07.001

Couldry, N., & Hepp, A. (2017). *The mediated construction of reality*. Polity Press.

Entman, R. M. (1993). Framing: Toward clarification of a fractured paradigm. *Journal of Communication*, 43(4), 51-58. https://doi.org/10.1111/j.1460-2466.1993.tb01304.x

Hjarvard, S. (2013). *The mediatization of culture and society*. Routledge.

r/Professors. (n.d.). *Reddit community for professors*. Reddit. https://www.reddit.com/r/Professors/

I'm addicted to doomscrolling and it's rotting my attention span completely

Louise Nagle[1]

[1]EDSU, Louise Nagle, Munster Technological University, Kerry, Ireland; louise.nagle@mtu.ie

Correspondence: Louise Nagle; louise.nagle@mtu.ie

Abstract:

The phenomenon of internet addiction is well documented and as far back as 2018 it was identified as a "public health hazard" (Crouch, 2018). Those working in HE often question if adequate assistance is being offered to those vulnerable to such dependence, particularly when Higher Education requires students to go online to learn and access resources. There is a vacuum in terms of guidance and policy in the area to resource academics and other university staff. The Educational Development Support Unit (EDSU) and the Technology Enhanced Learning Department (TEL) within Munster Technological University (MTU) conducted a survey on the University student population (n=1496) in February 2026. The majority of students surveyed spend over fifty percent of their online time on activities other than study and work. The majority of respondents also indicated that they would not find it easy to live without their smartphone and a large cohort are concerned about how their online interactions affecting their wellbeing. The research has raised the questions around what HEIs should be doing to support students digital wellness (Neverkovich et al; 2018; Colder Carras et al; 2024) . One approach being pursued is to offer workshops to MTU students based on the Digital Flourishing concept (Blankson, 2017).

Keywords: Digital Wellness, Student Support

References

Blankson, A. (2017). *The Future of Happiness: 5 Modern Strategies for Balancing Productivity and Well-Being in the Digital Era*. BenBella Books, Inc.

Colder Carras, M., Aljuboori, D., Shi, J., Date, M., Karkoub, F., García Ortiz, K., ... & Thrul, J. (2024). Prevention and health promotion interventions for young people in the context of digital well-being: rapid systematic review. *Journal of medical Internet research*, *26*, e59968.

Janicke-Bowles, S.H., Buckley, T.M., Rey, R. *et al.* Digital Flourishing: Conceptualizing and Assessing Positive Perceptions of Mediated Social Interactions. *J Happiness Stud* **24**, 1013–1035 (2023). https://doi.org/10.1007/s10902-023-00619-5

Crouch, E. 2018. #TBT: Combating internet addiction in China. *That's Shanghai*. http://www. thatsmags.com/shanghai/post/14395/tbt-combating-internet-addiction-in-china.

Neverkovich, S. D., Bubnova, I. S., Kosarenko, N. N., Sakhieva, R. G., Sizova, Z. M., Zakharova, V. L., & Sergeeva, M. G. (2018). Students' internet addiction: study and prevention. *Eurasia Journal of Mathematics, Science and Technology Education*, *14*(4), 1483-1495.

Teacher and Learner Wellbeing in an AI World: How can we design for Affective, Relational, and More-Than-Human Entanglements?

Bettina Schwenger [1]

[1] School of Education and Social Practice, University of Auckland, Aotearoa New Zealand; bettina.schwenger@auckland.ac.nz

Correspondence: Bettina Schwenger: bettina.schwenger@auckland.ac.nz

Abstract:

The rapid uptake of generative AI in education has intensified longstanding questions about wellbeing, agency, and responsibility for both teachers and learners. While institutional responses often focus on regulation, skills development, or efficiency gains, this concise paper argues that wellbeing in an AI mediated world is fundamentally a learning design issue. From a postdigital perspective, wellbeing cannot be reduced to individual resilience or coping strategies; it emerges through more than human entanglements involving people, technologies, emotions, institutional cultures, and material conditions.

Postdigital scholarship highlights that learning and teaching now occur within hybrid assemblages of humans and non-humans, where agency is distributed and outcomes are uncertain (Christensen et al, 2025; Fawns, 2022). In these contexts, affect is not peripheral. Teachers and learners encounter AI with mixtures of curiosity, excitement, anxiety, moral concern, frustration, and uncertainty. These emotional responses shape judgement, critical thinking, willingness to experiment, and perceptions of responsibility. Treating emotions as distractions to be managed risks undermining both learning and wellbeing.

For learners, AI promises personalisation and support, yet can also generate pressure, surveillance anxiety, and confusion around authorship and ethical boundaries. For teachers, AI introduces affective labour: negotiating institutional expectations, modelling ethical practice, and supporting students emotionally while managing their own uncertainty. Wellbeing, therefore, cannot be addressed without considering how learning designs invite—or suppress—emotional engagement with AI.

This paper proposes that learning designs explicitly engaging the affective domain are central to wellbeing in an AI world. Such designs move beyond individualised performance metrics towards relational, reflective, and embodied practices (Pallitt & Kramm, 2023). Indigenising perspectives, particularly from Aotearoa New Zealand, offer valuable insights by foregrounding care (manaakitanga), relationships (whanaungatanga), and holistic conceptions of learning that align closely with postdigital thinking. These approaches challenge neoliberal assumptions that value only what is measurable or automatable.

Embodied and materially focused activities—such as reflective engagement with AI outputs, collective sense making, or situated encounters with data—can support both learner and teacher wellbeing by legitimising emotion, uncertainty, and dialogue (Oberg et al., 2026). Rather than seeking control or certainty, such designs acknowledge that thriving in an AI world involves learning to feel, judge, and relate well within more than human contexts.

Discussion Points for Conference Participants

- How can learning design support emotional awareness rather than suppress emotions in AI mediated education?
- What responsibilities do institutions have for teacher wellbeing when AI intensifies affective labour?
- How can indigenous and relational approaches inform wellbeing focused AI pedagogy across contexts?

Keywords: affective doman, learning design, relational, more-than-human, entanglement

References

Christensen, I.-M. F., Dohn, N. B., & Christensen, L. L. W. (2025). Designing for literacy in a postdigital world. Postdigital Science and Education. https://doi.org/10.1007/s42438-025-00583-8.

Fawns, T. (2022). An Entangled Pedagogy: Looking Beyond the Pedagogy—Technology Dichotomy. Postdigital Science and Education, 4(3), 711-728. https://doi.org/10.1007/s42438-022-00302-7.

Oberg, G., Liang, Y., Bearman, M. *et al.* Feeling AI: Circulating emotions, institutional climates, and moral boundaries in student use of AI. *High Educ* (2026). https://doi.org/10.1007/s10734-026-01658-6

Pallitt, N., & Kramm, N. (2023). Beyond A 'Noticing Stance': Reflecting to Expand Postdigital Positionalities. In P. Jandrić, A. MacKenzie, & J. Knox (Eds.), Constructing Postdigital Research : Method and Emancipation (pp. 23-38). Cham: Springer. https://doi.org/10.1007/978-3-031-35411-3_2

Create, Think, Trust: Embedding Engagement in GenAI through Student Partnership

Fionnuala Darby[1]

[1] TU Dublin, Ireland; Fionnuala.Darby@tudublin.ie

Correspondence: Fionnuala Darby: Fionnuala.Darby@tudublin.ie

Abstract:

Working from the premise that generative artificial intelligence (GenAI) is already in our institutions, its rapid integration into higher education presents both transformative pedagogical opportunities and complex ethical challenges (Illingworth & Forsyth, 2026). A policy framework for teaching and learning that uses GenAI has been recently published in Ireland as a pedagogical tool and guide (O'Sullivan et al, 2025). While GenAI can enhance personalised learning and student engagement, it simultaneously raises concerns regarding bias, equity, academic integrity, and responsible use (Yusuf et al., 2024; Mak et al., 2025). This paper presents an embedded pedagogical approach designed to help educators and students confidently engage with GenAI through discovery, critical analysis, and reflective practice within a third-year undergraduate business module on 'Diversity in the Workplace' at Technological University Dublin.

Positioning GenAI as both a learning partner and an object of critique, the tutorial session focuses specifically on the topic of race and ethnicity. Students participate in a structured, hour-long tutorial that emphasises three developmental outcomes: creating dynamic text and visual artefacts using GenAI tools; thinking critically through scaffolded analysis of AI-generated outputs to uncover hidden societal biases; and cultivating trust by reflecting on responsible AI use. Concerns that GenAI systems may inherit or amplify social biases underscore the importance of such critical engagement, particularly in humanities and social science contexts where empirical research remains limited (Li et al., 2024). Moreover, studies suggest that large language models may deliver unequal experiences across demographic groups, reinforcing the need for equity-oriented pedagogies (Chen et al., 2024).

Developed at King's College London, the instructional design centres around the **PAIR** Framework to support responsible, human-centred AI integration (Acar, 2023) - **P**roblem formulation, **A**I tool selection, **I**nteraction, and **R**eflection. This four-phase scaffold encourages students to define problems clearly, engage intentionally with AI tools, iteratively evaluate outputs, and reflect on both process and learning. The framework promotes transferable skills while positioning AI as a tool that augments rather than replaces human judgment (Acar, 2023). Within this session, GenAI use is categorised as "embedded," signalling purposeful integration into learning activities rather than peripheral experimentation.

The conference presentation will demonstrate the practical implementation of this approach and present a SCOT (Strengths, Challenges, Opportunities, Threats) analysis of the pedagogical design. Particular attention is given to how structured AI engagement can support inclusive learning environments and transparent assessment practices. The session concludes by arguing for the co-development of "AI ethicists" within higher education so that educators and students are capable of interrogating outputs, advocating for equitable access, and navigating institutionally supported tools with integrity.

By modelling a student partnership environment of co-learning where educators and students jointly explore GenAI, this approach furnishes a replicable strategy for embedding ethical, critically informed AI pedagogy in curricula.

Keywords: Pedagogical Framework, Equitable Access, Student Partnership

References

Acar, O. A. (2023). *Are your students ready for AI? A 4-step framework to prepare learners for a ChatGPT world*. King's College London. PAIR framework guidance | King's College London

Chen, K., Shao, A., Burapacheep, J., & Li, Y. (2024). Conversational AI and equity through assessing GPT-3's communication with diverse social groups on contentious topics. *Scientific Reports, 14*, Article 51969. https://doi.org/10.1038/s41598-024-51969-w

Illingworth, S., & Forsyth, R. (2026). *GenAI in higher education: Redefining teaching and learning*. Bloomsbury Academic. https://doi.org/10.5040/9781350535824

Li, M., Enkhtur, A., Yamamoto, B. A., Cheng, F., & Chen, L. (2024). Ethical implications of ChatGPT in higher education: A scoping review. *Journal of Interdisciplinary Studies in Education*, *13,* Issue 1. https://doi.org/10.32674/jise.v13i1.6072

Mak, J., Nakatumba-Nabende, J., Clear, T., Clear, A., Albluwi, I., Andrei, O., Angeli, L., MacNeil, S., Oyelere, S. S., Rattigan, M. H., Sheard, J., & Zhu, T. (2025). *Navigating the ethical and societal impacts of generative AI in higher computing education*. https://arxiv.org/abs/2511.15768

O'Sullivan, J., Lowry, C., Woods, R., & Conlon, T. (2025). *Generative AI in Higher Education Teaching & Learning: Policy Framework.* Higher Education Authority, Dublin, Ireland. https://hub.teachingandlearning.ie/wp-content/uploads/2025/12/hea-genai-policy-framework.pdf

Yusuf, A., Pervin, N., & Román-González, M. (2024). Generative AI and the future of higher education: A threat to academic integrity or reformation? Evidence from multicultural perspectives. *International Journal of Educational Technology in Higher Education, 21*, Article 21. https://doi.org/10.1186/s41239-024-00453-6

‘Design your Dream Assessment’: Students reveal the unwritten rules of assessment design for the AI era

Laila Burton[1], Graham Garforth[2], Mychelle Pride[3]

[1] Pro Vice Chancellor Students’ Office, Open University, UK; Laila.burton@open.ac.uk
[2] Academic Services, Open University, UK; Graham.garforth@open.ac.uk
[3] Pro Vice Chancellor Students’ Office, Open University, UK; Mychelle.pride@open.ac.uk

Correspondence: Mychelle Pride: Mychelle.pride@open.ac.uk

Abstract:

Artificial intelligence is rapidly reshaping how students learn, how knowledge is constructed and how universities assess understanding and skills. For higher education, the challenge is not simply technological adoption but ensuring that AI strengthens learning, protects academic standards and prepares graduates for an increasingly AI-enabled world. While students can readily identify their best learning experiences, often citing inspiring teachers or practical activities, they frequently struggle to identify their best assessment experience. This gap raises questions about how assessment could be designed and experienced well in the AI-era.

This paper reports on a series of interactive workshops held during Open University University Student Consultation Week, where students were invited to ‘design their dream assessment’ in the AI era. To prepare students, they were introduced to Black and Wiliam’s (2012) model of assessment *for* learning and xxx University’s Academic Integrity Principles for Assessment Design. They were also shown recent student AI usage data (Stephenson & Armstrong, 2026) and asked to reflect on their own AI-supported learning practices. Working in small groups, students selected a topic and level, articulated a learning outcome, and designed an assessment that incorporated AI capability building while enabling markers to see evidence of the learning process and responsible AI use.

Student designs give institutions insight into what motivates students to genuinely engage, how they already use AI for assessment, where their human-AI boundaries are and what they consider is fair.

Keywords: student co-creation, student agency, assessment design, assessment for learning, student partnership, pedagogical responses to AI

Artificial intelligence is fundamentally reshaping how students learn, how knowledge is constructed, and how universities assess learning outcomes. While students can readily identify their most meaningful learning experiences, often inspiring teachers or practical activities, they frequently struggle to identify their best assessment, often remembering poor experiences instead. This contrast raises important questions about how assessment could be co-designed and experienced well in an AI-era.

During Student Consultation Week at the Open University, we ran several interactive workshops inviting students to design their ‘dream assessment.’ The activity aimed to surface student perspectives on what assessment could look

like when AI-supported learning is the expectation rather than the exception. To prepare participants, students were introduced to Black and Wiliam's (2012) model of assessment *for* learning and the Open University's Academic Integrity Principles for Assessment Design. They were presented student AI usage data (Stephenson & Armstrong, 2026) and asked to reflect on how they use AI to support learning. Finally, participants were presented with speculative examples of future assessment.

Working in small groups, students selected a subject area and level of study, agreed a learning outcome, and designed an assessment for learning that incorporated AI capability-building while enabling students to demonstrate their learning process. Students were encouraged to consider how their design would allow markers to recognise the learning outcome had been achieved and how responsible AI use could be demonstrated.

[Please note, this work builds on previous workshops with students to design the future of learning and assessment. The workshops for this paper are running w/c 23 March after which time the findings will be consolidated and put into the paper. At the conference, we would like to present examples of assessments designed by students. These findings will not have been presented anywhere else]

Treating student AI use as a baseline, the activity revealed insights into the unwritten rules of assessment. Students' designs highlighted what they believe is authentic and fair, what motivates genuine engagement, how AI is actually used in study practices, and which aspects of learning they believe should remain human-driven. Inviting students to design assessments offers institutions a powerful lens into how assessment operates in practice and how students imagine the future of learning.

References

Black, P., & Wiliam, D. (2012). Assessment for Learning in the Classroom. In *Assessment and Learning* (pp. 11–32). SAGE Publications Ltd. https://doi.org/10.4135/9781446250808.n2

Stephenson, R., & Armstrong, C. (2026). *Student Generative AI Survey 2026*. https://www.hepi.ac.uk/wp-content/uploads/2026/03/HEPI-Report-199-Gen-AI-Survey-2026.pdf

Navigating the Gap Between SRL and GenAI-SRL in Higher Education

Meital Amzalag[1], Omri Hadar[2]

[1]Holon Institute of Technology, Israel; meitalam@hit.ac.il
[1]The Hebrew University of Jerusalem, Israel; meitalam@hit.ac.il

Correspondence: Meital Amzalag: meitalam@hit.ac.il

Abstract:

Self-Regulated Learning (SRL) is a critical skill for students' academic success (Zimmerman, 2002) and a central competency for ensuring adaptability and success in the labour market (Cuyvers et al., 2020). SRL is defined as a process in which learners actively manage their own learning across phases of planning, performing, and self-reflection (Zimmerman, 2002).

Since the emergence of generative artificial intelligence (GenAI) and its widespread adoption among students (Chan & Hu, 2023), a growing body of literature suggests that these tools hold significant potential to enhance SRL processes by serving as "metacognitive partners" in the different phases of the SRL process (Sardi et al., 2025; Xia et al., 2026).

However, the relationship between students' general SRL proficiency and their application of these strategies assisted by GenAI tools is still underexplored. This quantitative study addresses this gap by examining the disparities and correlations between learners' perceived general SRL capabilities and their perceived application of these capabilities while utilizing GenAI tools (GenAI-SRL). Data were collected via a survey distributed on social media, involving 978 students. Participants completed a questionnaire assessing SRL measures alongside dedicated GenAI-SRL metrics, adapted from the validated instrument developed by Dahri et al. (2024).

Findings reveal a distinct and consistent gap between learners' perceptions regarding general SRL capabilities and their SRL strategies within GenAI environments. A Paired Samples t-test indicated that the general SRL mean (M=3.88, SD=0.62) was significantly higher than the mean for GenAI-SRL (M=3.01, SD=0.97), revealing a statistically significant difference ($t_{(977)} = 28.13$, $p < .001$) with a strong effect size ($d = 0.90$). Mediation analysis further indicates that while the frequency of GenAI use for academic purposes positively predicts the intensity of SRL strategies applied within the AI environment (b = .442, p < .001), the relationship between students' general SRL proficiency and their intentional choice to utilize the tool for learning is significantly weaker (a = .217, p < .001).

These findings suggest that although students utilize GenAI for learning purposes and perceive their general SRL capabilities as high, these capabilities do not automatically transfer to GenAI environments. Despite their engagement with GenAI for academic tasks, they do not currently leverage the tool as a "metacognitive partner".

Accordingly, there is a need for dedicated training in GenAI-SRL to assist learners in transferring their metacognitive strategies to these environments. Such programs should provide students with the tools to bridge the gap between their traditional metacognitive capabilities and their application within these technological learning environments, thereby transforming generative AI from a technical shortcut into a true partner in the thinking and learning processes.

Keywords: SRL, GenAI, GenAI-SRL, Students' GenAI use, Metacognitive partnership

References

Chan, C. K. Y., & Hu, W. (2023). Students' voices on generative AI: Perceptions, benefits, and challenges in higher education. *International Journal of Educational Technology in Higher Education*, *20*(1), 43. https://doi.org/10.1186/s41239-023-00411-8

Cuyvers, K., Van Den Bossche, P., & Donche, V. (2020). Self-Regulation of Professional Learning in the Workplace: A State of the Art and Future Perspectives. *Vocations and Learning*, *13*(2), 281–312. https://doi.org/10.1007/s12186-019-09236-x

Dahri, N. A., Yahaya, N., Al-Rahmi, W. M., Aldraiweesh, A., Alturki, U., Almutairy, S., Shutaleva, A., & Soomro, R. B. (2024). Extended TAM based acceptance of AI-Powered ChatGPT for supporting metacognitive self-regulated learning in education: A mixed-methods study. Heliyon, 10(8), e29317. https://doi.org/10.1016/j.heliyon.2024.e29317

Sardi, J., Darmansyah, Candra, O., Yuliana, D. F., Habibullah, Yanto, D. T. P., & Eliza, F. (2025). How Generative AI Influences Students' Self-Regulated Learning and Critical Thinking Skills? A Systematic Review. *International Journal of Engineering Pedagogy (iJEP)*, *15*(1), 94–108. https://doi.org/10.3991/ijep.v15i1.53379

Xia, Q., Liu, Q., Tlili, A., & Chiu, T. K. F. (2026). A systematic literature review on designing self-regulated learning using generative artificial intelligence and its future research directions. *Computers & Education*, *240*, 105465. https://doi.org/10.1016/j.compedu.2025.105465

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice*, *41*(2), 64–70.

Barbie as Metaphor for Generative AI in Higher Education

Carmen Vallis[1]

[1] The University of Sydney, Australia; carmen.vallis@sydney.edu.au

Correspondence: Carmen Vallis: carmen.vallis@sydney.edu.au

Abstract:

Discussions around generative artificial intelligence (GenAI) in higher education tend to polarise between utopian transformation and dystopian decline (Vallis, Wilson, & Casey, 2025), often removed from the actual capabilities of the technology (Cave & Dihal, 2019). In this paper, the 2023 film *Barbie* is used as a central metaphor and analytic lens to interrogate such assumptions in relation to GenAI in education (Vallis, 2025). Methodologically, the study combines close cultural text analysis of *Barbie* with theoretical framing of Jasanoff and Kim's 'sociotechnical imaginaries' (2015). It is argued that sociotechnical imaginaries collectively held ideas about desirable futures based on beliefs about the kind of society that science and technology can create (Jasanoff & Kim, 2015), shape cultural meanings of artificiality and agency in popular culture artefacts such as *Barbie* and is also evident in debates around GenAI in education.

Key narrative elements of the film are analysed, such as its satirical treatment of corporate power, and Barbie's transformation from plastic doll to "real" woman. This is examined alongside dominant discourses in the marketing of GenAI, where metaphor, media, and institutional practice also co-produce understandings of GenAI. The hyperreal aesthetic of Barbieland, which was described by the director as "authentic artificiality", is compared to the polished narratives of personalisation and efficiency promoted by EdTech industries. GenAI's promises of educational transformation can obscure the underlying systems of data extraction and optimisation (Ritzer et al., 2024), just as Barbie's empowerment is commercialised. Barbie as metaphor surfaces how educational technology privileges appearance for profit, rather than pedagogy.

Furthermore, in the film, Barbie's transformation from manufactured doll to embodied human reflects anxieties about authenticity and authorship as AI-generated video technology improves. As GenAI systems increasingly simulate voice, feedback, and text production, distinctions between real and artificial blur (Vallis, 2024). GenAI outputs may increasingly function as convincing copies without stable originals, complicating assessment, originality, and knowledge production in higher education (Luo, 2024).

To extend the analytic frame beyond such Western consumer imaginaries, the paper juxtaposes *Barbie* with Ellen van Neerven's Indigenous speculative fiction 'Water' (2014). This comparative reading introduces relational ontologies that unsettle our bounded ideas about human and nonhuman, natural and artificial, revealing how dominant narratives constrain educational possibilities. Education may be (re)generative if a relational, culturally responsive stance to GenAI integration is taken, that resists both technological solutionism and moral panic (Vallis, 2025). Finally, this study argues that the ways we imagine AI shape the educational futures we enact, and that this is critical in higher education.

Keywords: generative artificial intelligence in higher education, sociotechnical imaginaries, ethical AI, Indigenous perspectives in education

References

Cave, S., & Dihal, K. (2019). Hopes and fears for intelligent machines in fiction and reality. *Nature Machine Intelligence, 1*(2), 74–78. https://doi.org/10.1038/s42256-019-0020-9

Jasanoff, S., & Kim, S.-H. (2015). Future Imperfect: Science, Technology, and the Imaginations of Modernity. In *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power* (pp. 7–43). University of Chicago Press. https://doi.org/10.7208/chicago/9780226276663.001.0001

Vallis, C. (2024). Authentic assessment in higher education: The spectre of lost futures. Teaching in Higher Education, 30(3), 744–751. https://doi.org/10.1080/13562517.2024.2362217

Vallis, C. (2025). Barbie meets generative AI in education: Neither artificial nor intelligent? *Educational Philosophy and Theory, 57*(10), 871–882. https://doi.org/10.1080/00131857.2025.2480770

Vallis, C., Wilson, S., & Casey, A. (2025). Fear and awe: Making sense of generative AI through metaphor. *Journal of Interactive Media in Education, 2025*(1), Article 14. https://doi.org/10.5334/jime.972

Luo (Jess), J. (2024). A critical review of GenAI policies in higher education assessment: A call to reconsider the "originality" of students' work. *Assessment & Evaluation in Higher Education, 49*(5), 651–664. https://doi.org/10.1080/02602938.2024.2309963

Ritzer, G., Ryan, J. M., Hayes, S., Elliot, M., & Jandrić, P. (2024). McDonaldization and Artificial Intelligence. *Postdigital Science and Education*. https://doi.org/10.1007/s42438-024-00475-3

Van Neerven, E. (2014). *Heat and light*. University of Queensland Press.

From Workplace Experience to Competence Development: An AI-Supported Reflection Tutor for Dual Higher Education

Jörn Allmang[1], Ulf-Daniel Ehlers[2]

[1] Baden-Wuerttemberg Cooperative State University, Germany; joern.allmang@dhbw-karlsruhe.de
[2] Baden-Wuerttemberg Cooperative State University, Germany; ulf-daniel.ehlers@dhbw-karlsruhe.de

Correspondence: Jörn Allmang: Joern.Allmang@dhbw-karlsruhe.de

Abstract:

In dual higher education, competence development depends not only on workplace experience itself but also on learners' ability to reflect on that experience in a structured way. As educational research has long emphasized the importance of dialogical learning for fostering self-reflection and metacognitive skills, Socratic AI dialogue can be understood as a promising extension of this tradition. Recent research suggests that such structured AI-supported dialogue can deepen reflective thinking in higher education (Xi et al., 2026). This concise paper introduces Allex, an AI-supported reflection chatbot designed to foster competence development through a structured and pedagogically constrained reflection process. Rather than evaluating reflection quality alone, Allex performs competence-referenced formative diagnosis by identifying which Future Skills are evidenced in students' narratives and how strongly they are expressed. Accordingly, the paper examines how a pedagogically constrained AI-supported reflection tutor can support reflective competence development in dual higher education.

Learners describe dialogically situational demands, responsibilities, actions and reasoning processes to the chatbot. On this basis, the system maps narrative evidence to the 17 Future Skills profiles of the NextSkills framework (Ehlers, 2020). This shifts automated reflection analytics from asking whether a text is "reflective enough" toward asking which competences are demonstrated, with what degree of explicitness, and on what textual basis. The system returns four interconnected forms of feedback. First, it identifies which Future Skills are evidenced in the learner's narrative and to what degree they are expressed. Second, it highlights competences that appear relevant for handling the specific situation but are not sufficiently demonstrated in the reflection. Third, it points to competences that are generally important in comparable workplace situations, thereby extending reflection beyond the immediate case. Fourth, it provides suggestions for further competence development in areas where the available evidence remained limited. Rather than replacing reflection with automated judgment, it scaffolds reflective and regulatory processes that learners must still perform themselves, thus creating a strong foundation for competence development in line with Kolb's experiential learning theory (Kolb, 1984). Allex therefore does not provide terminal evaluation but initiates an output-to-learning cycle in which AI feedback is compared with self-assessment and discussed in peer reflection, positioning the system in line with current calls for agency-aware human–AI design in education (Cukurova, 2026).

Keywords: Competence Development, Chatbot, Generative AI, Future Skills, Higher Education

References

Cukurova, M. (2026). Agency as a system property in human–AI interaction in education. British Journal of Educational Technology. https://doi.org/10.1111/bjet.70060

Ehlers, U.-D. (2020). Future Skills: Lernen der Zukunft – Hochschule der Zukunft. Springer VS.

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development

Xi, L., Zhang, Y., & Wang, Q. (2026). Investigating the effects of an LLM-based Socratic conversational agent on students' academic performance and reflective thinking in higher education. Computers & Education, 241, 105494. https://doi.org/10.1016/j.compedu.2025.105494

Measuring Resilient Agency in the Age of Human-AI Collaboration: The RAPS Model

Tomas Butvilas[1], Ugne Supranaviciene[2]

[1] Faculty of Humanities and Social Sciences, Mykolas Romeris University, Lithuania; tbutvilas@mruni.eu
[2] Faculty of Humanities and Social Sciences, Mykolas Romeris University, Lithuania; ugsupranaviciene@stud.mruni.eu

Correspondence: Ugne Supranaviciene: ugsupranaviciene@stud.mruni.eu

Abstract:

Organisational instability and technology inconsistency make professional learning a significant yet often neglected challenge. Studies on digital transformation have uncovered a consistent decoupling between technologies and learning capacity (Vial, 2019). In addition, transformational learning theory has not fully grasped the contexts in which the disorienting dilemma is a perpetual rather than a one-off experience (Taylor & Cranton, 2012; Illeris, 2018).

Objective. Research aims to develop, validate, and psychometrically operationalise an original conceptual framework, the RAPS model (RAPS) – Resilient Agency through Psychological Safety. The model demonstrates how adult professionals maintain ongoing learning in an AI-saturated organisational space with structural ambiguity. The study seeks to establish the model's cross-country measurement validity in the Baltic and Nordic Fintech context.

The RAPS framework integrates six constructs that are derived from theories, namely, organisational learning culture, psychological safety, Stoic resilience, learning dispositions, adaptive performance and human-AI trust. According to Edmondson and Lei's (2014) construct history and meta-analytic evidence pertaining to contextual variance (Frazier et al., 2017; Newman et al., 2017), RAPS views resilient agency as a digitally mediated and socially enacted capacity rather than a stable trait. The concept of stoic resilience acts as a moderator, which is defined through the eph' hēmin controllability reappraisal (Sherman 2021). In total, the formal hypotheses to test quantitatively in phase 3.

Methodology. The research applies Instrument Development Mixed-Methods procedures (Creswell and Plano Clark, 2018). Phase 1, which has now been completed, consisted of a structured expert survey with a Delphi-lite design involving 6 domain experts from the Baltic and Nordic fintech and adult learning research communities. The expert justifications were analysed using thematic coding. Currently underway is Phase 2, which will implement digital ethnography research for fintech professional communities over a four-to-six-month timeframe, use of Critical Incident Technique (CIT) interviews to seek ecological validity before large-scale testing. In Phase 3, the RAPS v3.0 instrument, consisting of 76 items that are validated as part of six scales, will be administered to 500 professionals. Structural hypotheses will be tested using CFA and SEM in Mplus.

Findings. Phase 1 findings show that **e**xpert panels from two cultural settings independently challenged two prevailing design assumptions. First, psychological safety should not be presumed stable across organisational hierarchies in AI-saturated environments. Power proximity and algorithmic surveillance function as structural antecedents not addressed by team-level models, consequently extending the research agenda outlined by Edmondson and Bransby (2023). Second, panellists consistently identified human-AI trust as a probable *predictor* of psychological safety rather than its downstream consequence. They contended that distrust in organisational AI governance inhibits learning disclosure before interpersonal climate variables become relevant. Although the WEF (2023) classifies AI transparency as a governance variable, RAPS expert data reposition it as a design variable for learning environments.

These propositions challenge two enduring assumptions in digital learning assessment and invite critical dialogue regarding construct validity, cross-cultural measurement, and the governance conditions that support professional learning under structural uncertainty (Kegan & Lahey, 2016).

Keywords: resilient agency, psychological safety, human-AI trust, transformative learning, structural uncertainty, digital learning assessment

References

Creswell, J. W., & Plano Clark, V. L. (2018). Designing and conducting mixed methods research (3rd ed.). Sage.

Edmondson, A. C., & Bransby, D. P. (2023). Psychological safety comes of age. Annual Review of Organizational Psychology and Organizational Behavior, 10, 55–78. https://doi.org/10.1146/annurev-orgpsych-120920-055217

Edmondson, A. C., & Lei, Z. (2014). Psychological safety: The history, renaissance, and future of an interpersonal construct. Annual Review of Organizational Psychology and Organizational Behavior, 1, 23–43. https://doi.org/10.1146/annurev-orgpsych-031413-091305

Frazier, M. L., Fainshmidt, S., Klinger, R. L., Pezeshkan, A., & Vracheva, V. (2017). Psychological safety: A meta-analytic review and extension. Personnel Psychology, 70(1), 113–165. https://doi.org/10.1111/peps.12183

Illeris, K. (2018). Contemporary theories of learning (2nd ed.). Routledge.

Kegan, R., & Lahey, L. L. (2016). An everyone culture: Becoming a deliberately developmental organization. Harvard Business Review Press.

Newman, A., Donohue, R., & Eva, N. (2017). Psychological safety: A systematic review of the literature. Human Resource Management Review, 27(3), 521–535. https://doi.org/10.1016/j.hrmr.2017.01.001

Sherman, N. (2021). Stoic wisdom: Ancient lessons for modern resilience. Oxford University Press.

Taylor, E. W., & Cranton, P. (Eds.). (2012). The handbook of transformative learning: Theory, research, and practice. Jossey-Bass.

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. Journal of Strategic Information Systems, 28(2), 118–144. https://doi.org/10.1016/j.jsis.2019.01.003

World Economic Forum. (2023). The future of jobs report 2023. World Economic Forum. https://www.weforum.org/reports/the-future-of-jobs-report-2023

An Interactive Application to Support Learning from Digital Systems to Embedded Systems

Carlos Verenzuela[1], Duarte Lourenço[2], Francisco Matos[3], Guilherme Gabino[4], Joaquim Martins[5], João Pinho[6], Fábio Coutinho[7], Arnaldo Oliveira[8]

[1] Departamento de Eletrónica, Telecomunicações e Informática, Universidade de Aveiro, Portugal: carlos.verenzuela@ua.pt
[2] Departamento de Eletrónica, Telecomunicações e Informática, Universidade de Aveiro, Portugal: duarte.lourenco@ua.pt
[3] Departamento de Eletrónica, Telecomunicações e Informática, Universidade de Aveiro, Portugal: franciscojosematos23@ua.pt
[4] Departamento de Eletrónica, Telecomunicações e Informática, Universidade de Aveiro, Portugal: guilherme.gabino@ua.pt
[5] Departamento de Eletrónica, Telecomunicações e Informática, Universidade de Aveiro, Portugal: joaquimmartins33@ua.pt
[6] Departamento de Eletrónica, Telecomunicações e Informática, Universidade de Aveiro, Portugal: joaocbpinho@ua.pt
[7] Instituto de Telecomunicações, Departamento de Eletrónica, Telecomunicações e Informática, Universidade de Aveiro, Portugal: fabiocoutinho@ua.pt
[8] Instituto de Telecomunicações, Departamento de Eletrónica, Telecomunicações e Informática, Universidade de Aveiro, Portugal: arnaldo.oliveira@ua.pt

Correspondence: Fábio Coutinho: fabiocoutinho@ua.pt

Abstract:

Recent shifts in pedagogical practices and study habits have highlighted the need to capture and sustain students' attention through more interactive and engaging learning experiences. Traditional lecture-based approaches have shown limitations in maintaining engagement, particularly in technically demanding STEM disciplines (Parra-González et al., 2025). Research suggests that gamified learning environments, incorporating short-term goals, visible progression, and positive reinforcement, can significantly improve motivation, self-efficacy, and academic performance in higher education (Marlow et al., 2024; Zeng et al., 2024). Concurrently, the rapid advancement of Large Language Models has opened new avenues for scalable, personalized education, enabling automatic exercise generation and immediate adaptive feedback at low cost (Meyer et al., 2024; Thomas et al., 2026).

In this context, this paper presents the development of an educational application aimed at teaching Digital Systems, Computer Architecture, and Embedded Systems, with the goal of making traditionally demanding content more accessible, motivating, and effective. The application seeks to promote consistent study through short-term goals, visible progression, positive reinforcement, and frequent challenges, drawing inspiration from the Duolingo platform and its widely recognized success (Shortt et al., 2023; Andrade et al., 2022). In parallel, the application leverages AI mechanisms, namely Large Language Models (LLMs), for the automatic generation of exercises, assessment, and immediate feedback, as well as for learner support, through a domain-specific language model oriented towards Digital Systems, Computer Architecture, and Embedded Systems (Murgia et al., 2024).

Prior to its presentation at EDEN 2026, the application will undergo pilot validation with students enrolled in the relevant courses at the host department. This local evaluation will serve to assess usability, learning outcomes, and overall engagement, providing empirical grounding for the findings to be showcased at the conference. Beyond its academic scope, the broader ambition of this project is to make application freely available to both the academic community and the general public. By offering an open, accessible platform, the application aims to support not only enrolled students but also professionals seeking to refresh their knowledge, self-learners exploring these fields for the first time, and anyone wishing to consolidate foundational concepts in Digital Systems, Computer Architecture, and Embedded Systems. In this way, the project aspires to contribute to the democratisation of technical education, lowering the barriers to entry for complex but increasingly relevant engineering topics.

Keywords: AI, digital systems, education, gamification, LLMs.

References

Andrade, P., Cruz, S., & Santos, C. (2022). When gamification spoils your learning: A qualitative case study of gamification misuse in a language-learning app. *Proceedings of the ACM Conference on Learning @ Scale*. https://doi.org/10.1145/3491140.3528274

Marlow, B., Boahin, K., & Brown, T. (2024). Improving retention while enhancing student engagement and learning outcomes using gamified mobile technology. *Journal of Further and Higher Education, 48*(4). https://doi.org/10.1080/09639284.2024.2326009

Meyer, J., Jansen, T., Schiller, R., Liebenow, L. W., Steinbach, M., Horbach, A., & Fleckenstein, J. (2024). Using LLMs to bring evidence-based feedback into the classroom. *Computers and Education: Artificial Intelligence, 6*, 100199. https://doi.org/10.1016/j.compeai.2023.100199

Murgia, E., Holl, H., Haselberger, D., & Noguera, M. (2024). Evaluation of LLM tools for feedback generation in a course on concurrent programming. *International Journal of Artificial Intelligence in Education*. https://doi.org/10.1007/s40593-024-00406-0

Parra-González, M. E., Segura-Robles, A., Gómez-Barajas, E. R., & López-Belmonte, J. (2025). How gamification boosts learning in STEM higher education: A mixed methods study. *International Journal of STEM Education, 12*(1). https://doi.org/10.1186/s40594-024-00521-3

Shortt, M., Tilak, S., Kuznetcova, I., Martens, B., & Akinkuolie, B. (2023). Gamification in mobile-assisted language learning: A systematic review of Duolingo literature from public release of 2012 to early 2020. *Computer Assisted Language Learning, 36*(3). https://doi.org/10.1080/09588221.2021.1933540

Thomas, D. R., et al. (2026). LLM-generated feedback supports learning if learners choose to use it. *Springer*. https://doi.org/10.1007/978-3-032-03870-8_33

Zeng, Z., Shen, H., & Li, Y. (2024). Exploring the impact of gamification on students' academic performance: A comprehensive meta-analysis of studies from 2008 to 2023. *British Journal of Educational Technology*. https://doi.org/10.1111/bjet.13471

GenAI in Computational Thinking: A Design Approach to Assessment and Student Reasoning

Noga Reznik[1], Maya Usher[2], Rina Esipovich-Polonsky[3], Dan Kohen-Vacs[4]

[1] HIT - Holon Institute of Technology, Israel; Nogal@hit.ac.il
[2] HIT - Holon Institute of Technology, Israel; mayau@hit.ac.il
[3] HIT - Holon Institute of Technology, Israel; rinae@my.hit.ac.il
[4] HIT - Holon Institute of Technology, Israel; mrkohen@hit.ac.il

Correspondence: Noga Reznik: Nogal@hit.ac.il

Abstract:

Computational Thinking (CT) is a core competence in higher education and the labor market, involving problem decomposition, algorithmic reasoning, debugging, and systematic solution design (Wing, 2006). The rise of generative AI (GenAI) is reshaping the epistemic and pedagogical foundations of CT and programming education (Kohen-Vacs et al., 2025). As AI can generate solutions that once required manual algorithm construction, the focus shifts from code production to interpreting and orchestrating computational outputs. This shift challenges traditional definitions of CT competence and raises concerns about assessment validity, learner agency, and the visibility of students' reasoning. Because many novices already struggle to articulate their logic, AI further complicates the interpretation of learning processes. Higher education is therefore reexamining teaching and assessment practices to ensure responsible AI integration and sustain meaningful CT engagement (Kurtz et al., 2024).

This paper presents the initial phase of a design-based research study focused on the use of an open-source environment using Blockly library providing the functionalities available in Scratch environment which are extended as part of our development effort with GenAI integrations. Connected to OpenAI and Gemini APIs, the system enables students to insert AI-query blocks during tasks, positioning AI as an explicit, student-controlled tool rather than an automated guidance mechanism.

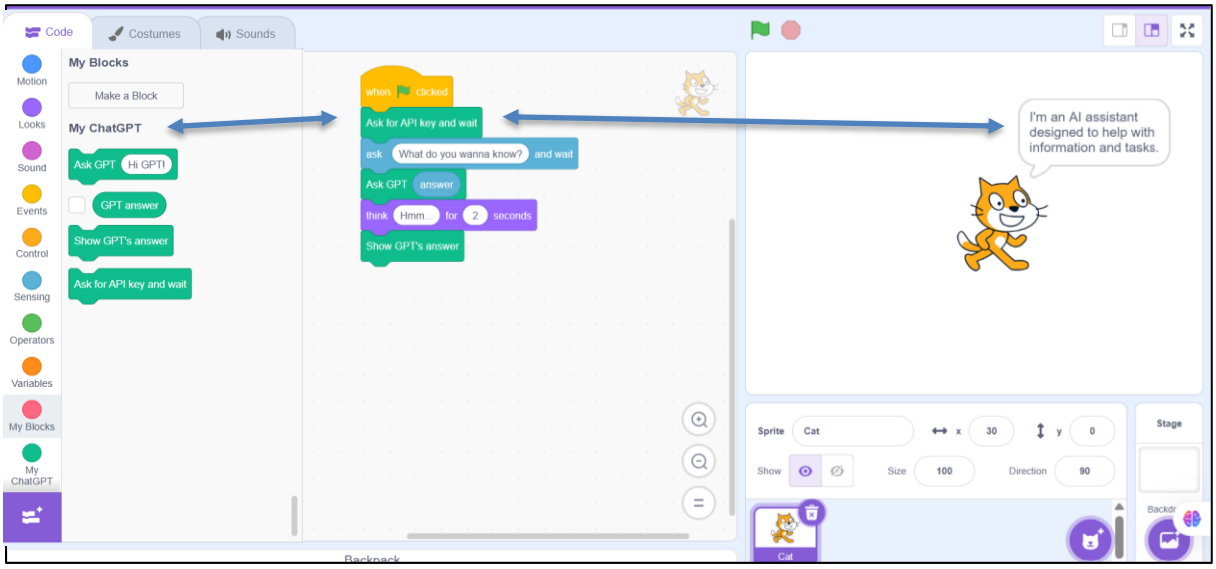


***Figure 1**. Student workflow in the Scratch-based environment with optional GenAI interaction blocks*

The environment enhances the visibility of learners' reasoning, preserves agency in AI-rich contexts, and shifts assessment toward process-oriented evidence. It captures artefacts and interaction traces while embedding metacognitive prompts at two key moments: students articulate their initial plan at task onset and reflect upon submission. By combining reflections with programming traces, the system operationalizes a process-aware model of CT.

During Fall 2025, the environment was implemented with 60 first-year undergraduate students in an "Introduction to Computational Thinking" course. Students completed structured programming tasks as part of regular assignments. Initial findings suggest promising outcomes: students demonstrated high engagement, and the course lecturer reported improved visibility into reasoning processes, effective monitoring of AI use, and more targeted formative feedback. These early indications align with the environment's design goals preserving learner agency in AI-rich contexts, making thinking processes pedagogically visible, and re-anchoring assessment in process-oriented evidence rather than solely in final artefacts.

Keywords: Computational Thinking (CT), Generative AI, Learner Agency, AI-Mediated Feedback

References

Kohen-Vacs, D., Usher, M. & Jansen, M. (2025). Integrating Generative AI into Programming Education: Student Perceptions and the Challenge of Correcting AI Errors. *Int J Artif Intell Educ 35*, 3166–3184. https://doi.org/10.1007/s40593-025-00496-4

Kurtz G, Amzalag M, Shaked N, Zaguri Y, Kohen-Vacs D, Gal E, Zailer G, Barak-Medina E. (2024). Strategies for Integrating Generative AI into Higher Education: Navigating Challenges and Leveraging Opportunities. *Education Sciences*, *14*(5), 503.

Wing, J.M., 2006. Computational thinking. *Communications of the ACM* 49, 33–35.

ThinkAI: Supporting Critical GenAI Evaluation Through Simulation (Study in Progress)

Netta Soreq[1], Gila Kurtz[1], Alon Bartal[2], Yael Dubinsky[3], Eran Gal[1], Sigal Tifferet[4], Shlomo Mark[5], Gilad Ravid[6], Koby Azran[7], Yaara Welcman[8]

[1] Faculty of Instructional Technologies, Holon Institute of Technology (HIT), Israel; Nettas@hit.ac.il, Gilaku@hit.ac.il, Erang@hit.ac.il
[2] The Graduate School of Business Administration, Bar-Ilan University, Israel; Alon.bartal@biu.ac.il
[3] Faculty of Technology, Ramat Gan College RGC, Israel; Yael.d@iac.ac.il
[4] Dept. of Business Administration, Ruppin Academic Center, Israel; Tifferet@ruppin.ac.il
[5] Software engineering, Sami Shamoon College of Engineering, Israel; Marks@sce.ac.il
[6] Industrial Engineering and Management Department, Ben-Gurion University of the Negev, Israel; Rgilad@bgu.ac.il
[7] The Edmond de Rothschild Bridge for Higher Education and Employment, Israel; Koby@merkaz-edr.org.il
[8] Coller School of Management, Tel Aviv University, Israel; Yaara@yaarawelcman.com

Correspondence: Netta Soreq: nettas@hit.ac.il

Abstract:

The integration of generative artificial intelligence (GenAI) tools in higher education has led to increased attention to pedagogical approaches that foreground human judgment, critical thinking, and responsible engagement with AI-generated content (Yan et al., 2024). Although students frequently use GenAI systems, prior research documents gaps in competencies related to evaluation, verification, and reflective decision making within AI-supported tasks (Kasneci et al., 2023; Miao et al., 2024).

This paper presents *ThinkAI*, an AI-driven, simulation-based learning environment designed to support undergraduate students' critical thinking in contexts involving GenAI use. Grounded in experiential learning theory (Kolb, 1984), simulation-based learning research (Chernikova et al., 2020), and the Promoting Expertise Through Simulation (PETS) framework (Jossberger et al., 2022), the ThinkAI simulation structures engagement through preparation, guided practice, feedback, and reflection. The design aligns with design-based research principles, positioning AI as a resource embedded within a human-centered decision-making process (Bannan-Ritland, 2003).

The paper reports findings from an ongoing, formative empirical study involving 76 undergraduate students who engaged with the *ThinkAI* simulation across multiple iterative deployments. Data sources included system-generated interaction logs and self-reported measures capturing engagement, confidence, and perceived learning outcomes. Analysis focuses on patterns of learner interaction, critical evaluation practices, and design-related insights that inform ongoing refinement of the simulation and research design, rather than on summative claims of effectiveness. This work is presented as a study in progress and provides empirical, design-oriented, and methodological insights relevant to ongoing work on simulation-based learning and critical thinking in generative AI-supported higher education contexts.

Keywords: Generative AI; Critical Thinking; Simulation-based Learning; higher education

References

Bannan-Ritland, B. (2003). The role of design in research: The integrative learning design framework. *Educational Researcher, 32*(1), 21–24. https://doi.org/10.3102/0013189X032001021

Chernikova, O., Heitzmann, N., Stadler, M., Holzberger, D., Seidel, T., & Fischer, F. (2020). Simulation-based learning in *higher education: A meta-analysis. Review of Educational Research, 90*(4), 499–541. https://doi.org/10.3102/0034654320933544

Jossberger, H., Breckwoldt, J., & Gruber, H. (2022). *Promoting expertise through simulation (PETS): A conceptual framework*. *Learning and Instruction, 82*, 101686. https://doi.org/10.1016/j.learninstruc.2022.101686

Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., & Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences, 103*, 102274. https://doi.org/10.1016/j.lindif.2023.102274

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. *Prentice Hall*.

Miao, F., Shiohira, K., & Lao, N. (2024). AI competency framework for students. *UNESCO*. https://doi.org/10.54675/JKJB9835

Yan, L., Jiang, Y., Zhu, S., Zhang, Y., & Chi, M. (2024). Promises and challenges of generative artificial intelligence for human learning. *Nature Human Behaviour, 8, 1839–1850.* https://doi.org/10.1038/s41562-024-02004-5

Listening pedagogies to support ethical decision-making in the age of AI

Stephanie Wilson[1]

[1] The University of Sydney Business School, The University of Sydney, Australia; stephanie.wilson@sydney.edu.au

Correspondence: Stephanie Wilson: stephanie.wilson@sydney.edu.au

Abstract:

In higher education contexts, where GenAI is increasinglty embedded in teaching, assessment, and academic work, listening pedagogies offer a way to slow down and critically attend to how AI shapes learning, authorship and decision-making. Listening pedagogies have the potential to deepen our understanding of the textural complexity of educational technologies including GenAI (Wilde et al., 2024). Developing such pedagogies is vital at a time when technological 'noise' is pervasive. A postdigital perspective supports an understanding of educational technologies, as it acknowledges and explores the blurred relationships between humans and technology, and the complexities of postdigital ecologies that now include the integration of algorithms, artificial intelligence, and the biodigital in everyday experiences (Jandrić et al. 2018). In our postdigital world, technologies increasingly operate imperceptibly. As noted by Heybach (cited in Jackson et al. 2025), danger is no longer sensed through direct stimuli but is often disguised in pleasing, sanitised experiences (p. 655). Algorithms act silently, working in the background and shaping our attention, while GenAI complicates our sense of who or what we are listening to. Its voice is paradoxically 'powerful (in tone) and powerless (in substance)', 'a voice from nowhere' that eludes clear origin or intent (p. 659).

This presentation addresses the conference sub-theme of pedagogical responses to AI reconfigurations of education. Building on research in the areas of postdigital sound and soundscape ecology, the presentation introduces a framework to support the development of listening pedagogies in the age of AI (Author, 2026, in press). Such pedagogies are needed to surface the inconspicuous elements of GenAI and support ethical decision-making around AI use in higher edcuation. The framework includes seven interwoven attributes: revealing the hidden; naming sonic phenomena; attending to the relationship between humans, technologies and more-than human voices; listening to the intersticies; cultivating awareness of the interplay of the senses; fostering expansiveness, and connecting past, present and future. The framework can be used by educators and researchers to construct listening pedagogies that work with sound as materiality to help us attune to our entanglements with digital systems. In practice, these attributes translate into pedagogical approaches that can be used in course design, assessment and classroom interaction, such as guiding students to attend to the 'voice' of GenAI, designing learning activities that surface algorithmic influence, and using reflective listening tasks to question authorship, authority, and agency in interactions involving AI.

This presentation invites participants to reflect on their own uses of GenAI in teaching and assessment, and to consider how listening pedagogies might be incorporated into their disciplinary contexts to support more ethical and critically attentive AI practices.

Keywords: listening pedagogies, Gen AI, algorithms, sound, postdigital education, ethical AI

References

Jackson, L., Sidorkin, A. M., Jandrić, P., Costello, E., Heyback, J. A., Greenhalgh-Spencer, H., … Tesar, M. (2025). The voice of artificial intelligence: Philosophical and educational reflections. *Educational Philosophy and Theory, 57*(7), 650-661.

Jandrić, P., Knox, J., Besley, T., Ryberg, T., Suoranta, J., & Hayes, S. (2018). Postdigital science and education. *Educational Philosophy and Theory*, *50*(10), 893-899.

Wilde, L., White, C. & Jandrić, P. (2024). Postdigital resonance. *Postdigital Science and Education*, *7*, 359-268. :10.1007/s42438-024-00516-x.

Wilson (2026, in press). Towards a postdigital listening ecopedagogy for nature connection. In J. Reed (Ed.). *Postdigital Nature Connection: Entangling Ecologies and Technologies.* Cham: Springer.

An Updated Ecopedagogical Framework for AI Policy in Higher Education

Dewa Wardak[1], Stephanie Wilson[2]

[1] The University of Sydney Business School, The University of Sydney, Australia; dewa.wardak@sydney.edu.au
[2] The University of Sydney Business School, The University of Sydney, Australia; stephanie.wilson@sydney.edu.au

Correspondence: Dewa Wardak: dewa.wardak@sydney.edu.au

Abstract:

At the EDEN Conference 2025, we presented a preliminary framework for analysing Artificial Intelligence (AI) policy in higher education. Since then, we have significantly extended this framework by grounding it more deeply in ecopedagogy literature.

Ecopedagogies constitute an area of educational research and practice that supports critical examinations of the politics of socio-environmental relations across local, global, and planetary contexts (Ford & Jandrić, 2022; Jandrić, MacKenzie & Knox, 2023). Building on this foundation, our work engages with classical ecopedagogy scholarship to strengthen the theoretical grounding of AI policy analysis.

We draw particularly on the contributions of Richard Kahn (2010), Moacir Gadotti (2008), and Greg William Misiaszek (2021). These are the key figures in the development of ecopedagogy and intellectual inheritors of Paulo Freire's critical pedagogy. Their work connects environmental justice, sustainability, and education with critiques of capitalism, colonialism, and neoliberalism. Through engagement with these scholars, we distilled six core ecopedagogical principles: critical literacy; planetary consciousness; social and environmental justice; transformative action; systems thinking/interconnectedness; and collective responsibility.

- Critical consciousness, or critical literacy, refers to the process through which learners develop the capacity to perceive, question, and interpret the world around them. It is concerned with how people come to understand reality and recognise the social, political, and cultural forces that shape their experiences.

- The principle of planetary consciousness serves as the ontological foundation. It addresses how reality itself is understood, asking what kind of world ecopedagogy assumes we inhabit and how humans relate to the Earth as an interconnected system.

- Social and environmental justice functions as the critical principle through which power is analysed. It asks who benefits, who suffers, and why, foregrounding issues of inequality, exploitation, and ecological harm.

- Transformative action focuses on the change that education should help to bring about. It emphasises praxis, which is linking reflection with action, to foster more just and sustainable futures.

- Systems thinking, or interconnectedness, concerns how knowledge is constructed. This principle highlights complexity, interdependence, and the need to understand relationships among social, ecological, and economic systems.

- Collective responsibility centres on the development of shared ecoliteracy rather than individual competence alone. It connects learning with collective values, sustainability, and an ethic of planetary interconnectedness.

These principles were subsequently operationalised into a practical framework structured around two evaluative criteria (planetary consciousness; social and environmental justice) and four analytical dimensions (critical literacy; systems thinking/interconnectedness; transformative action; collective responsibility). This framework enables systematic analysis of AI policies and institutional guidelines in higher education through an ecopedagogical lens.

In this presentation, we introduce the updated and extended framework and demonstrate its application through an analysis of an AI policy document in Australin higher education context. The framework is designed for a broad audience, including educators, educational technologists, institutional leaders, and policymakers who are concerned with the environmental impacts of AI and seek more holistic and justice-oriented approaches to AI integration in higher education.

Keywords: Ecopedagogy; Artificial Intelligence (AI); Higher education; Policy

---

References

Ford, D., & Jandrić, P. (Eds.) (2022). *Postdigital ecopedagogies: Genealogies, contradictions, and possible futures*. Postdigital Science and Education Book Series. Springer Cham. :10.1007/978-3-030-97262-2

Jandrić, P., MacKenzie, A., & Knox, J. (Eds). (2023). *Postdigital research: Genealogies, challenges, and future perspectives*. Springer Cham. :10.1007/978-3-031-31299-1

Gadotti, M. (2008). What we need to learn to save the planet. *Journal of Education for Sustainable Development, 2(*1), 21-30. https://doi.org/10.1177/097340820800200108

Kahn, R. V. (2010). *Critical pedagogy, ecoliteracy, & planetary crisis: The ecopedagogy movement* (Vol. 359). Peter Lang.

Misiaszek, G. W. (2021) *Ecopedagogy: Critical environmental teaching for planetary justice and global sustainable development*, London: Bloomsbury Academic.

Automated Outcome Feedback vs Chatbot-Based Process Scaffolding for Verbal Analogies in Adults With and Without ADHD

Adi Brann[1], Yael Sidi[1], Ina Blau[1]

[1] Department of Education and Psychology, The Open University of Israel, Israel; adibr@openu.ac.il; yaelsi@openu.ac.il; inabl@openu.ac.il

Correspondence: Adi Brann: adibr@openu.ac.il

Abstract:

Outcome feedback can support problem solving when learners use correctness signals to regulate subsequent attempts and adjust solution strategies (Panadero & Lipnevich, 2022). In current educational contexts, GenAI systems can also provide process scaffolding during problem solving. However, GenAI may promote uncritical advice-taking and overreliance (Ikeda, 2024; Yan et al., 2024), raising a central question: does it scaffold learners' reasoning, or displace regulatory control and undermine durable learning and transfer?

To address this question, we compared two forms of support: outcome-only feedback and chatbot-based process scaffolding. Verbal analogies were selected as the problem-solving task because they rely on general knowledge and require structured relational mapping and verification (Gentner & Forbus, 2025). The supports were compared in adults with and without attention deficit hyperactivity disorder (ADHD) because multi-step analogical reasoning draws on executive control, semantic conflict resolution, and metacognitive regulation, which are often less efficient in ADHD (Drigas & Karyotaki, 2019; Laine et al., 2025; Segal et al., 2015), whereas external cues can scaffold their learning (Barkley, 2015; Brann & Sidi, 2025). We expected outcome-only feedback to benefit non-ADHD participants via self-guided error analysis, and chatbot-based process scaffolding to benefit adults with ADHD by externalizing strategy steps during practice.

Participants were 213 native English-speaking adults with no self-reported learning disability, recruited via Prolific from prescreened ADHD and non-ADHD pools. The study used a 2 (Group: ADHD vs non-ADHD) × 2 (Support: outcome-only feedback vs constrained chatbot) between-participants design. ADHD status (n = 105) was based on self-reported formal diagnosis and screened with the ASRS-v1.1 (Kessler et al., 2007); non-ADHD participants with elevated ASRS-v1.1 scores were excluded. Within each pool, participants were randomly assigned to support condition. All participants read a step-by-step solving strategy and reviewed and restated three worked examples to verify engagement. Training included three novel analogies. In the outcome-only feedback condition, participants solved each analogy unaided and received knowledge-of-results automated feedback (correct/incorrect) after each attempt. In the chatbot condition, participants solved each analogy with a constrained chatbot that scaffolded strategy execution during the attempt but did not provide the correct answer. The chatbot used fixed multi-turn prompts with increasingly specific hints; transcripts were used for completion screening. After each training analogy, all participants saw the correct answer and wrote a brief justification, equating answer exposure across conditions.

After training, participants completed a 15-item unaided test of novel analogies with confidence ratings for each item; response times were recorded to calculate efficiency. Dependent variables were test accuracy, average confidence, and metacognitive monitoring measures: calibration (confidence-accuracy alignment), and resolution (discrimination between correct and incorrect responses).

Results showed that unaided test accuracy was higher in the chatbot condition for both ADHD and non-ADHD participants, with no efficiency differences. Chatbot support also increased confidence in both groups without undermining metacognitive monitoring. Contrary to our expectation, the chatbot advantage over outcome-only feedback was comparable for ADHD and non-ADHD participants. Overall, results support a human-GenAI collaboration approach in which a constrained chatbot scaffolds strategy use, improves transfer to an unaided test, and preserves monitoring accuracy.

Keywords: Constrained chatbot scaffolding, outcome-only feedback, verbal analogies, metacognitive monitoring accuracy, learner agency, ADHD.

References

Barkley, R. A. (2015). Executive functioning and self-regulation viewed as an extended phenotype: Implications of the theory for ADHD and its treatment. In *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment* (4th ed., pp. 405–434). Guilford.

Brann, A., & Sidi, Y. (2025). Metacognitive scaffolding for digital reading and mind-wandering in adults with and without ADHD. *Learning and Instruction*, *95*, 102051. https://doi.org/10.1016/j.learninstruc.2024.102051

Drigas, A., & Karyotaki, M. (2019). Executive functioning and problem solving: a bidirectional relation. *International Journal of Engineering Pedagogy (iJEP)*, *9*(3), 76-97. https://doi.org/10.3991/ijep.v9i3.10186

Gentner, D., & Forbus, K. (2025). The structure-mapping engine: A multidecade interaction between psychology and artificial intelligence. *Current Directions in Psychological Science*. https://doi.org/10.1177/09637214251395678

Ikeda, S. (2024). Inconsistent advice by ChatGPT influences decision making in various areas. *Scientific Reports*, *14*(1), 15876. https://doi.org/10.1038/s41598-024-66821-4

Kessler, R. C., Adler, L. A., Gruber, M. J., Sarawate, C. A., Spencer, T., & Van Brunt, D. L. (2007). Validity of the World Health Organization Adult ADHD Self-Report Scale (ASRS) Screener in a representative sample of health plan members. *International Journal of Methods in Psychiatric Research*, *16*(2), 52–65. https://doi.org/10.1002/mpr.208

Laine, M., Kunnari, A., Eräste, T., Ritakallio, L., Hedberg, B., & Salmi, J. (2025). The role of spontaneous strategy use in verbal episodic memory impairment in adult ADHD. *Journal of Neuropsychology*, *19*(3), 454–472. https://doi.org/10.1111/jnp.12416

Panadero, E., & Lipnevich, A. A. (2022). A review of feedback models and typologies: Towards an integrative model of feedback elements. *Educational Research Review*, *35*, 100416. https://doi.org/10.1016/j.edurev.2021.100416

Segal, D., Mashal, N., & Shalev, L. (2015). Semantic conflicts are resolved differently by adults with and without ADHD. *Research in Developmental Disabilities*, *47*, 416–429. https://doi.org/10.1016/j.ridd.2015.09.024

Yan, L., Greiff, S., Teuber, Z., & Gašević, D. (2024). Promises and challenges of generative artificial intelligence for human learning. *Nature Human Behaviour*, *8*(10), 1839–1850. https://doi.org/10.1038/s41562-024-02004-5

Learner Motivations in Human–AI Collaborative Reading: The AIR scale

Yael Sidi[1], Shir Etgar[2], Adi Brann[1]

[1] Education and Psychology, The Open University of Israel, Israel; yaelsi@openu.ac.il; adibr@openu.ac.il
[2] DAN Department of Communication, Faculty of Social Sciences, Tel-Aviv University, Israel; shiretgar@tauex.tau.ac.il

Correspondence: Yael Sidi: yaelsi@openu.ac.il

Abstract:

Generative AI (GenAI) tools are increasingly embedded in everyday learning practices, including reading, summarizing, and interpreting texts (Deng et al., 2025). GenAI can enhance efficiency and facilitate interaction with texts (Alemdag, 2025; Yan et al., 2024), yet it also presents challenges, such as inaccuracies, shallow processing, and overreliance (Fan et al., 2025; Stadler et al., 2024; Yan et al., 2024). While research on GenAI-assisted reading is still limited, students' use of GenAI in learning contexts has been characterized as minimizing effort and cognitive involvement (Wang et al., 2025). Such interpretations may obscure the diversity of motivations that shape how learners choose to collaborate with AI during reading. Thus, the present research aimed to develop a tool for identifying learners' motivations for using GenAI during reading.

Across two studies we developed and validated the GenAI-Assisted Reading (AIR) questionnaire. In Study 1 (N = 425), an exploratory factor analysis identified four motivational dimensions: (a) Task-Oriented, reflecting strategic and cognitively-engaged use of GenAI for reading tasks; (b) Feel-Good, reflecting emotional and social motivations, such as reducing frustration, increasing enjoyment, or feeling socially connected through AI interactions; (c) Low-Effort, reflecting motivations of minimizing cognitive effort; and (d) Translation, reflecting GenAI use to enhance accessibility and comprehension across languages.

Study 2 (N = 414) confirmed this structure through a confirmatory factor analysis and demonstrated good reliability and construct validity. Additionally, the AIR questionnaire showed differentiated associations with several theoretical constructs. First, positive relationships with autonomy-oriented motivations for AI use (AI Motivation Scale; Li et al., 2025) suggest that learners incorporate it strategically to support goals and to regulate learning processes. Second, the negative association of low effort with Need for Cognition (NFC, Cacioppo & Petty, 1982) suggests that individuals lower in NFC are more likely to use GenAI to minimize effort, whereas other motivations for GenAI use for reading does not appear to be motivated by a preference for cognitive challenge. Third, correlations with the Technology Acceptance Model (TAM, Davis, 1989) demonstrate that motivational patterns may be guided by learners' attitudes toward technology, such as perceived usefulness and ease of use. This finding situates GenAI-assisted reading within broader frameworks of technology adoption. In contrast, AIR motivations were largely unrelated to task-switching tendencies or self-reported learning and attention difficulties. This implies that GenAI-assisted reading is not simply a byproduct of distraction or compensatory behavior for cognitive deficits but reflects distinct and purposeful motivational processes specific to the reading context.

Together, the findings highlight that learners use GenAI while reading for strategic, affective, or accessibility-related purposes, challenging the assumption that GenAI use primarily reflects cognitive offloading or disengagement. Importantly, distinguishing these motivations helps clarify when GenAI is likely to support constructive meaning-making and when it might instead promote shallow processing. From a human–AI collaboration perspective, and drawing on emerging theoretical and empirical work on constructive learning in AI-mediated text environments

(McCarthy & Yan, 2023), the AIR scale provides a practical tool for examining how motivational orientations shape interaction patterns, learner agency, and the potential consequences of AI-supported reading.

Keywords: Generative artificial intelligence; AI-supported reading; Learner motivation; Human–AI interaction; Technology acceptance

References

Alemdag, E. (2025). The effect of chatbots on learning: A meta-analysis of empirical research. Journal of Research on Technology in Education, 57(2), 459–481. https://doi.org/10.1080/15391523.2023.2255698

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology, 42*(1), 116–131. https://doi.org/10.1037/0022-3514.42.1.116

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319. https://doi.org/10.2307/249008

Deng, R., Jiang, M., Yu, X., Lu, Y., & Liu, S. (2025). Does ChatGPT enhance student learning? A systematic review and meta-analysis of experimental studies. *Computers & Education, 105224.* https://doi.org/10.1016/j.compedu.2024.105224

Fan, Y., Tang, L., Le, H., Shen, K., Tan, S., Zhao, Y., Shen, Y., Li, X., & Gašević, D. (2025). Beware of metacognitive laziness: Effects of generative artificial intelligence on learning motivation, processes, and performance. *British Journal of Educational Technology, 56*(2), 489–530. https://doi.org/10.1111/bjet.13544

Li, J., King, R. B., Chai, C. S., Zhai, X., & Lee, V. W. Y. (2025). The AI Motivation Scale (AIMS): A self-determination theory perspective. *Journal of Research on Technology in Education,* 1–22. https://doi.org/10.1080/15391523.2025.2478424

McCarthy, K. S., & Yan, E. F. (2023). Reading comprehension and constructive learning: Policy considerations in the age of artificial intelligence. *Policy Insights from the Behavioral and Brain Sciences, 11*(1), 19-26. https://doi.org/10.1177/23727322231218891

Stadler, M., Bannert, M., & Sailer, M. (2024). Cognitive ease at a cost: LLMs reduce mental effort but compromise depth in student scientific inquiry. *Computers in Human Behavior, 160,* 108386. https://doi.org/10.1016/j.chb.2024.108386

Wang, K. D., Wu, Z., Tufts, L., Wieman, C., Salehi, S., & Haber, N. (2025). *Scaffold or crutch? Examining college students' use and views of generative AI tools for STEM education*. Paper presented at 2022 IEEE Global Engineering Education Conference (EDUCON), 1–10. https://doi.org/10.1109/educon62633.2025.11016406

Yan, L., Greiff, S., Teuber, Z., & Gašević, D. (2024). Promises and challenges of generative artificial intelligence for human learning. *Nature Human Behaviour, 8*(10), 1839–1850. https://doi.org/10.1038/s41562-024-02004-5

From Experimentation to Process-Oriented Use: A Two-Year Snapshot of First-Year Students' Generative AI Adoption in Design Courses

Nohar Raz Fogel[1], Lilach Gal[1]

[1] Faculty of Instructional Technologies, HIT, Israel; nohar@hit.ac.il

Correspondence: Nohar Raz Fogel: nohar@hit.ac.il

Abstract:

The rapid diffusion of generative artificial intelligence (GenAI) is reshaping learning practices in higher education and accelerating digital transformation across disciplines (Crompton & Burke, 2023). Emerging research has examined students' perceptions, attitudes, and reported GenAI in academic contexts (e.g., Cotton et al., 2023; Kasneci et al., 2023), yet limited attention has been given to how novice learners integrate these tools into authentic project-based workflows and how such integration evolves over time. This study presents a two-year comparative analysis of GenAI usage patterns among first-year undergraduate students in the Faculty of Instructional Technologies who collaborated on an integrated final project spanning three courses in user -interface (UI) design, user -experience (UX) design and web accessibility.

Students worked in small teams on a project simulating a professional design workflow. The course structure, project brief, instructional materials, assessment criteria, and survey instrument remained identical across both two years, enabling a valid year-to-year comparison. The project progresses through four key phases: ideation, user research, design specification, and digital asset creation. Students develop personas, conduct research, produce wireframes and visual components, and address accessibility considerations. Throughout both years, students were allowed to use GenAI tools for the project, while remaining accountable for the results. Data were gathered using an identical questionnaire that evaluated phase-specific GenAI usage, perceived contribution, and the likelihood of using GenAI in future projects, all measured on a 1–5 Likert scale. A total of 65 student teams participated (July 2024: n = 32; July 2025: n = 33). The analysis combined descriptive statistical comparisons with thematic analysis of open-ended responses.

Findings indicate a developmental shift between cohorts. In 2024, students primarily framed GenAI as a source of inspiration and experimentation, using it to generate initial ideas and explore possibilities. In 2025, reports reflected more targeted and process-oriented applications, including refining content, supporting UX-related decisions, and iterating design components. Student discourse shifted from novelty-driven enthusiasm or uncertainty to a more pragmatic, critical stance toward GenAI as a supportive tool that requires contextual judgment.

Furthermore, while perceived contribution ratings remained relatively stable across cohorts, reported usage increased substantially across all project phases. Research-phase use rose from 45% in 2024 to 84% in 2025; ideation from 21% to 50%; design specification from 27% to 53%; and asset creation from 52% to 78% (see Figure 1). Beyond behavioral indicators, students' future-oriented attitudes also strengthened: willingness to use GenAI in future

projects increased significantly from M = 4.27 (SD = 0.94) in 2024 to M = 4.78 (SD = 0.49) in 2025, t(50.70) = -2.80, p = .007, Cohen's d = 0.68.

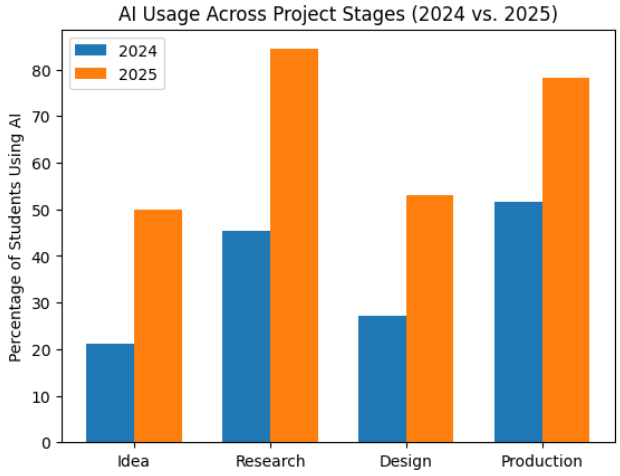


Figure 1. Percentage of students reporting generative AI use across four design stages in two consecutive cohorts. Usage increased across all stages, most notably in research (45%–84%) and ideation (21%–50%).

Taken together, the findings suggest a process of integration in which GenAI becomes embedded within disciplinary practice. Even within the first year of study, students demonstrate emerging context-sensitive GenAI literacy practices, integrating GenAI outputs into domain-specific reasoning rather than treating them as authoritative solutions (Kasneci et al., 2023). These findings underscore the importance of framing GenAI as a cognitive partner that supports reflective design thinking while maintaining human agency and critical oversight.

Keywords: Generative AI; AI Literacy; Design-Based Learning; Educational Innovation; Student Adoption; AI Integration in Education

References

Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. Innovations in Education and Teaching International, 60(6), 1–12. https://doi.org/10.1080/14703297.2023.2190148

Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: the state of the field. International Journal of Educational Technology in Higher Education, 20(1), 1–22. doi: https://doi.org/10.1186/s41239-023-00392-8

Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T., & Kasneci, G. (2023). *ChatGPT for good? On opportunities and challenges of large language models for education*. Learning and Individual Differences, 103, 102274. https://doi.org/10.1016/j.lindif.2023.102274

The student-defined place of genAI support for interactive oral assessment

Elly Meredith[1], Alison Casey[2]

[1] School of Work and Organisational Studies, University of Sydney School of Business, Australia; elly.meredith@sydney.edu.au
[2]School of Work and Organisational Studies, University of Sydney School of Business, Australia; alison.casey@sydney.edu.au

Correspondence: Alison Casey: alison.casey@sydney.edu.au

Abstract:

Interactive oral assessment (IOA) takes the form of a professional conversation between a student and their educator. It shows great promise as a rare mode of secure assessment that can be authentic and engaging for students if thoughtfully designed (Ward et al., 2024). This paper reports on a case study that is part of a wider investigation into the experience of developing, delivering and engaging in IOAs for both students and educators. In this case, we report on the effects of using genAI assistance for students in preparing for IOAs in a postgraduate business course. The course has been run three times with an IOA as the final assessment. In the first two instances, evaluation of the assessment experience revealed that students had been using genAI in different ways to augment the existing support provided by the educator to prepare for the IOA. In the third delivery of the course, students were provided with a customised chatbot, co-designed with previous students in the course, as part of their support for the assessment. Data collected under ethics were aggregated assessment data for all three deliveries, student focus group interviews for all three deliveries, chatbot conversation histories for the third delivery and interviews with the educator for the first and third delivery. Evaluation in the wider project had shown that the student experience of IOAs mapped closely to Earl and Timperley's professional conversation framework (Earl & Timperley, 2009). This framework is used to abductively thematically analyse the student interviews and the chatbot conversations to identify how the chatbot fit into the support students made use of in preparing for the assessment, and how it affected their use of other support mechanisms in order to better tailor the design of the IOA experience.

Keywords: Interactive oral assessment, genAI support, authentic assessment, students as partners

References

Earl, L. M., & Timperley, H. (2009). *Professional Learning Conversations : Challenges in Using Evidence for Improvement* (1st ed. 2009.). Springer Netherlands. https://doi.org/10.1007/978-1-4020-6917-8

Ward, M., O'Riordan, F., Logan-Fleming, D., Cooke, D., Concannon-Gibney, T., Efthymiou, M., & Watkins, N. (2024). Interactive oral assessment case studies: An innovative, academically rigorous, authentic assessment approach. *Innovations in Education and Teaching International*, *61*(5), 930–947. https://doi.org/10.1080/14703297.2023.2251967

Reading the Machine: Hermeneutics and Critical AI Literacy in a Literature Classroom

Randall Fullington[1]

[1] Office of Academic and Learning Innovation, University of Colorado Boulder, US; randall.fullington@colorado.edu

Correspondence: Randall Fullington: randall.fullington@colorado.edu

Abstract:

AI text generators are not simply a new writing tool—they are a shift in how meaning is made. Built on statistical probability, AI output strips away the lived context, dialogic depth, and poetic function that make language human. If text shapes experience and agency, as Gadamer and Habermas argue, then the expansion of AI demands a renewed commitment to hermeneutics: teaching students to read AI critically, interrogate its output, and deploy it with purpose. The literature classroom is uniquely equipped for this work. In spring 2026, I developed a sequence of three scaled online courses embedding AI tools within an American literature curriculum. Grounded in three principles—preparing students for their present reality, building analytical assignments, and requiring metacognitive reflection—the courses ask students to engage AI as an intellectual interlocutor rather than a shortcut. Assignments require students to contemplate the revision process through AI-powered dialogue, compare AI-generated and human-authored texts, and defend interpretations against AI counterarguments. This presentation shares the assignment designs and pedagogical framework behind this approach, offering humanities educators a tested model for teaching the literacy our moment demands.

Keywords: AI literacy; Hermeneutics; AI Humanities; Human-AI dialogue

The rapid expansion of AI into everyday life demands a renewed commitment to hermeneutics—the practice of critical interpretation—so that students can engage AI not as passive consumers, but as skilled, skeptical thinkers. As Hans-Georg Gadamer and Jürgen Habermas argue, human-generated text is both a lens through which we perceive the world and a mechanism of power (Maciag 2023). Text shapes experience and agency. AI-generated text complicates that relationship. Built on statistical probability, AI output strips away the lived context, dialogic depth, and poetic function that make language human. The result is not just a new writing tool—it is a shift in how meaning is made. We must respond by teaching students to read AI critically and deploy it with purpose.

The literature classroom is uniquely equipped for this work. It is already a space where students learn to read with skepticism, reason through complexity, and construct arguments in dialogue with other minds. In an AI-infused world, literature assignments must go further: they should teach students to use AI as a tool for refining their writing process, to interrogate AI output with a critical eye, and to produce arguments built on their own reasoning.

In spring 2026, I developed a sequence of three scaled online courses using AI tools within a literature curriculum. The course focus—American "Gangster Fiction"—gives students a rich tradition from which to analyze while practicing critical AI engagement. Three pedagogical principles grounded the design: preparing students for their present reality, building interactive assignments, and requiring metacognitive reflection alongside AI use.

The first course asks students to submit a first and second draft to an AI-powered dialogue tool, receive personalized follow-up questions, and reflect on their revision process based on that exchange. The goal here is to warm students up to the dialogue tool while also providing a personalized experience. The second course challenges students to compare AI-generated text with a human-authored work—not to judge one against the other, but to interrogate what AI produces. The third course requires students to develop a unique interpretation of a novel, present it to AI, and engage the AI in dialogic synthesis. Students then revise their arguments in response and reflect on what the process revealed.

If text is power, then literacy in the age of AI must mean more than knowing how to prompt a chatbot. Our students must learn how to read AI content, challenge it, and use it on their own terms. Teaching learners to interrogate AI through a hermeneutical lens—comparing parts to wholes, situating output within human experience, and demanding dialogue rather than passive consumption—is foundational for the literacy of our moment. This presentation will share the assignment designs and the pedagogical framework behind this approach to initiate a conversation on bringing critical AI literacy into humanities classrooms.

References

Maciag, R. (2023). The hermeneutics of artificial text. *Computer Sciences & Mathematics Forum*, 8(1), 94; https://doi.org/10.3390/cmsf2023008094

Critical evaluation of two AI tools used in Biochemical Engineering teaching

Mauryn Chika Nweke[1], Rana Khalife[1]

[1] Department of Biochemical Engineering, University College London, UK; c.nweke@ucl.ac.uk
[1]Department of Biochemical Engineering, University College London, UK; rana.khalife.13@ucl.ac.uk

Correspondence: Mauryn Chika Nweke: c.nweke@ucl.ac.uk

Abstract:

This study examines the implementation of two AI and digital learning tools—Vitafluence, a personalised AI feedback system, and Labster, a virtual laboratory simulation platform—within engineering education to enhance student learning, engagement, and assessment practices. Building on insights from the publication *Exploring the Feasibility of Integrating Personalised AI in Project Work and Its Impact on Student Learning and Staff Load*, we evaluate how Vitafluence supports formative feedback by providing tailored, real-time guidance during project development. Findings highlight its potential to reduce staff marking load while enabling students to iteratively refine their work with greater autonomy and confidence. Complementarily, informed by the publication *Investigating the Usage of Labster and Its Future Implications for Industry and Academia*, the integration of Labster is explored as a means of strengthening conceptual understanding and exposing students to industry-aligned laboratory practices through immersive simulations. Together, the tools were implemented across select engineering modules, with early evidence indicating improved student preparedness, greater consistency in feedback, and enhanced perceptions of learning relevance. The study further considers staff experiences, challenges related to adoption, and implications for institutional AI policy. These insights form the basis for future research on scaling AI-enhanced tools to support inclusive, authentic, and industry-responsive engineering education.

Keywords: AI tools in engineering, impact on staff load, student autonomy

The implementation of both Vitafluence and Labster demonstrates meaningful but distinct contributions to enhancing learning, confidence, and preparedness within engineering education. Vitafluence, a personalised AI feedback tool, was evaluated in the context of a regenerative medicine design project, where it was introduced to support student project work and reduce staff load. According to the study by Khalife et al. (2025), students reported substantial benefits to their learning: *53% experienced increased academic confidence*, and *over half recommended integrating the tool into formal academic support structures*. These results suggest that Vitafluence effectively enhances students' self-efficacy by offering timely, tailored feedback during the iterative stages of project development. Despite this, the tool did not significantly replace educators; *88% of students still sought further clarification from staff*, indicating that while AI feedback can supplement learning, it currently functions more as a support mechanism than a substitute for academic guidance. Notably, the study also revealed gender-related confidence differences, with *female participants reporting reduced confidence in the AI tool's ability to improve their performance*, highlighting potential areas for improved AI usability or communication strategies.

In contrast, Labster, a virtual laboratory simulation platform, addresses challenges around access to physical laboratory training—particularly relevant during COVID-19 disruptions. The publication by Khalife et al. 2023 found

that *over 60% of MSc graduates felt Labster effectively prepared them for engineering work environments*. This suggests that virtual simulations can successfully bridge gaps in hands-on skills by supporting conceptual understanding and allowing safe practice of laboratory techniques. Industry feedback also highlighted Labster's relevance: companies commented that although they often use proprietary virtual lab tools, Labster still played a valuable role in helping students develop foundational competencies required in engineering workplaces. Furthermore, all student participants in the study considered Labster useful for strengthening their understanding of underlying theory, making subsequent in-person practical work more accessible and less intimidating.

Taken together, both tools offer complementary benefits: Vitafluence enhances formative assessment, feedback, and student confidence in project-based learning, while Labster improves laboratory preparedness, industry alignment, and conceptual mastery. The evidence indicates that integrating AI-enabled personalised feedback with high-fidelity virtual simulations has the potential to create a more resilient, flexible, and student-centred engineering curriculum. Each tool, however, requires thoughtful pedagogical framing to ensure equitable confidence and clarity in use across all student groups.

References

Khalife, R, Nweke MC, Laufer TJ. (2025). *Exploring the feasibility of integrating personalised AI in project work and its impact on student learning and staff load*. In The Barcelona Conference on Education 2025: Official Conference Proceedings (pp. 363–370). The International Academic Forum (IAFOR). https://doi.org/10.22492/issn.2435-9467.2025.29

Khalife, R., Springer, P., & Nweke, C. (2023). *Investigating the usage of Labster and its future implications for industry and academia*. In The European Conference on Education 2023: Official Conference Proceedings (pp. 351–360). IAFOR. https://doi.org/10.22492/issn.2188-1162.2023.28

Enhancing student agency in AI-assisted learning environments: the DiHor project

Lucia Cintia Colibaba[1], Irina Gheorghiu[2], Ioan Juncu[3], Carmen Antonita[4], Stefan Colibaba[5]

[1] University of Life Sciences Iasi, Romania; cintia.colibaba@gmail.com
[2] Albert Ludwigs University Freiburg, Germany; irina_gheorghiu16@yahoo.com
[3,4] EuroEd Highschool Iasi, Romania; ioan.juncu@euroed.ro; carmenantonita@yahoo.com
[5] EuroEd foundation Iasi, Romania; stefan.colibaba1954@gmail.com

Correspondence: Stefan Colibaba: stefan.colibaba1954@gmail.com

Abstract:

The paper studies the Digital Horizon (DiHor) project, funded by the European Commission under the Erasmus+ programme, which is implemented by a partnership of universities, high schools, and NGOs specialising in education and IT from Italy, Portugal, France, and Romania. In recent years, the education system has viewed digital technologies and AI with a mix of excitement and doubt. Despite the promise to transform education, actual use in schools has sparked concerns about screen addiction, data privacy, and dehumanisation. The DiHor project equips teachers, students, and parents with the knowledge, skills, and strategies necessary to successfully incorporate digital technologies and artificial intelligence (AI) into education and ensure students' holistic human development. The paper describes the bottom-up strategy underpining the project online course which will be tested with teachers, parents, and students with a view to balancing student AI use and agency, namely, their ability to shape their own learning path in an AI-embedded environment.

We asked all 78 students from EuroED High School Iasi, Romania, about their AI usage and how this affects them. In designing the survey, we started from Matusov's (2016) mapping concepts of agency in educational contexts and proposed a framework covering the main domains of student agency in an AI-assisted environment: epistemic (engagement with knowledge), strategic-operational (management of AI tools), motivational-agentic (self-regulated participation), relational-collaborative (interaction with others), and ethical-critical (responsible and reflective use of AI).

The survey measured students' AI-assisted learning habits, judgments, and sense of agency by examining how they use AI, frequency and reasons of AI use, how they evaluate AI-generated information, manage and control AI tools, and use AI in group work. Students' ethical awareness (authorship, fairness, bias, privacy, intentional limits on AI, and AI disclosure) is also considered.

We found that AI use is moderate in student learning, rather occasional for the majority and on the increase with age. Students use AI for study support, explanations, information, and revision, particularly in science. Still, many demonstrate active agency by seeking online confirmation, revising AI results, and looking for bias or missing views. The findings also show significant tensions, with over 50% not disclosing AI use in assignments, and few considering fairness, bias, or authorship. AI prejudice is underestimated, while collaborative regulation is weak since many students don't discuss AI in group work. Some students show a developing awareness of boundaries and appropriate use by avoiding AI when testing knowledge, or to protect creativity and maintain fairness.

The findings of DiHor project (2026-1-IT02-KA220-SCH-000359420) contributed to EuroEd School policies and the development of the online project course insofar as they enabled us to select targeted interventions, match the key tensions to the relevant online course modules, and propose viable solutions. This guaranteed a theoretically grounded course content while meeting students' needs. The findings also informed the school's AI strategy by aligning it with last year's initiative when we created a dedicated AI-strategy committee and had two staff and the director attend the EDEN DLA event in Barcelona to discuss AI implementation in schools.

Keywords: student agency, AI-supported learning, survey, school policies, online project course

References

Akgun, S., & Greenhow, C. (2022). Artificial intelligence in education: Addressing ethical challenges in K–12 settings. AI and Ethics, 2(3), 431–440.

Archer, M. S. (2000). *Being human: The problem of agency*. Cambridge University Press.

Brod, G., Kucirkova, N., Shepherd, J., Jolles, D., & Molenaar, I. (2023). Agency in educational technology: Interdisciplinary perspectives and implications for learning design. *Educational Psychology Review*, 35(1), 25.

Crawford, K., & Boyd, D. (2012). Critical questions for big data: Provocations for a cultural, technological, and scholarly phenomenon. *Information, Communication & Society*, 15(5), 662–679.

Darvishi, A., Khosravi, H., Sadiq, S., Gašević, D., & Siemens, G. (2024). Impact of AI assistance on student agency. *Computers & Education*, 210, 104967. https://doi.org/10.1016/j.compedu.2023.104967

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits. *Psychological Inquiry,* 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Emirbayer, M., & Mische, A. (1998). What is agency? *American Journal of Sociology*, 103(4), 962–1023.

Matusov, E., von Duyke, K., & Kayumova, S. (2016). Mapping concepts of agency in educational contexts. *Integrative Psychological and Behavioral Science*, 50(3), 420–446

Mingfeng, L., & Wang, Y. (2026). Artificial intelligence in the classroom: Implications for pedagogical design and student agency in secondary education. https://doi.org/10.21203/rs.3.rs-8166344/v1

Reeve, J. (2013). How students create motivationally supportive learning environments for themselves. *Educational Psychologist*, 48(3), 137–153.

Selwyn, N. (2019). *Should robots replace teachers?: AI and the future of education*. John Wiley & Sons.

Vaughn, M. (2020). What is student agency and why is it needed now more than ever? *Theory Into Practice,* 59(2), 109–118.

Click, Chat, Consult: Medical students practising history taking with an AI-based virtual patient

Jesper Pool[1,2], Remco Jongkind[1,2], Inayah Hodžic[1] ,Isabelle Paans[1], Eline Verberne[1,2], Suzanne Geerlings[4], Inge Henselmans[3]

[1] Teaching and Learning Center, Faculty of Medicine, University of Amsterdam, Amsterdam, the Netherlands
[2] Amsterdam Public Health research institute, Amsterdam UMC, Amsterdam, the Netherlands
[3]Department of Medical Psychology, Amsterdam University Medical Center, Amsterdam, The Netherlands
[4]Department of Internal Medicine, div Infectious dis, Amsterdam Public Health, Amsterdam UMC, Amsterdam, the Netherlands

Correspondence: Jesper Pool: j.j.pool@amsterdamumc.nl

Abstract:

Background: Effective physician–patient communication is a core competency in undergraduate medical education, yet students have limited real patient contact and usually practice with peers or standardized patients (SPs) (Berkhof et al., 2011). SPs are effective but resource intensive and may induce substantial performance anxiety (May et al., 2009). Generative AI (GenAI)–based virtual patients may offer a scalable, low-threshold way to practice basic communication skills before encounters with SPs (Holderried et al., 2024).

Intervention: We developed the "pAItient sim", a GenAI-based virtual patient enabling students to practice patient communication skills in a text-based chat. The system uses GPT 4.1 on a secure institutional platform, constrained by a detailed behavioural prompt and structured case description to ensure medically plausible, role-consistent and didactically useful responses. Students can initiate multiple consultations at their own pace. Earlier small-scale pilot work suggested student enthusiasm and perceived usefulness but could not yield firm conclusions on perceived learning effectiveness (Jongkind et al., 2026). Because students communicate with the pAItient sim outside direct teacher supervision, it is important to understand how students use the tool and which communication skills in history taking students actually demonstrate, and hence practice. It is also relevant to investigate the realism of the pAItient sim itself and the student's usage and views about this tool.

Methods: In an observational mixed-methods study, second-year medical students were offered the pAItient sim as optional preparation supplementing their regular history-taking training. Using deductive thematic analysis of anonymized chat transcripts we examined: (1) how students communicate/ practice with the pAItient sim and (2) how realistic and pedagogically appropriate pAItient sim's behaviour is. Also, perceived learning value, user experience, tool usage, and students motivations to use or not use the tool were measured with a post-class questionnaire.

Results: 248 (of 375) students filled in the questionnaire of whom 51 used the pAItient sim. Half of the 51 students used the tool only once. A total of 99 anonymized transcripts were gathered. Analysis of the transcripts shows that the majority of questions are biomedical questions, which is in line with conversations with a SP. This also corresponds to the topics students indicate they perceive they can practice with this instrument; more biomedical topics rather than patient perspectives, or other communication skills like showing empathy. Students that didn't use the tool indicate having little time to make use of it, or didn't see the value of practising with a written GenAI-chatbot due to its limited realism.

Conclusion: This presentation will give actionable insights into student engagement with, and pedagogical positioning of, GenAI virtual patients in medical curricula. We will discuss how perceptions of usefulness and realism shape actual tool use, and what this implies for design and implementation. To move *beyond technology* as mere

solutionism, we propose a structured human–GenAI learning sequence in which students first practice foundational communication skills with GenAI patients, reserving scarce SP encounters for cultivating the deeper socio-emotional dimensions of care, such as empathy.

Keywords: Medical education, Communication skills training, Generative AI, Virtual patient

References

Berkhof, M., van Rijssen, H. J., Schellart, A. J., Anema, J. R., & van der Beek, A. J. (2011). Effective training strategies for teaching communication skills to physicians: an overview of systematic reviews. *Patient education and counseling,* 84(2), 152–162. Doi: 10.1016/j.pec.2010.06.010

May, W., Park, J.H. & Lee, J.P. (2009). A ten-year review of the literature on the use of standardized patients in teaching and learning: 1996 – 2005. *Med Teach.* 31(6):487-92. Doi: 10.1080/01421590802530898

Jongkind, R., Pool, J., Verberne, E., Meinema, J., Geerlings, S. & Henselmans, I. (2026). Use of a GenAI patient to improve medical communication training for undergraduate medical students – a quasi-randomized trial [Unpublished manuscript]. Teaching and Learning Center, University of Amsterdam

Holderried, F., Stegemann-Philipps, C., Herschbach, L., Moldt, J. A., Nevins, A., Griewatz, J., Holderried, M., Herrmann-Werner, A., Festl-Wietek, T., & Mahling, M. (2024). A Generative Pretrained Transformer (GPT)-Powered Chatbot as a Simulated Patient to Practice History Taking: Prospective, Mixed Methods Study. *JMIR medical education*, 10, e53961. Doi: 10.2196/53961

Can AI Spark Wonder? Reclaiming Curiosity in Human-AI Collaboration for Management Education

Lucy Gill-Simmen[1]

[1] Royal Holloway, University of London, UK; lucy.gill-simmen@rhul.ac.uk

Correspondence: Lucy Gill-Simmen: lucy.gill-simmen@rhul.ac.uk

Abstract:

This paper explores how human–AI collaboration might be reframed as a site of curiosity, imagination and pedagogical possibility in management education. Management education claims to prepare students for uncertainty, complexity and change. Yet much of its pedagogy remains oriented towards standardisation, predictability and performance optimisation (Barnett, 2000; Biesta, 2020). The rapid integration of artificial intelligence risks intensifying this paradox. Positioned as a tool for efficiency by automating feedback, streamlining assessment and personalising learning, AI may further narrow education to what can be measured, predicted and controlled (Selwyn, 2019; Williamson, 2023; UNESCO, 2023).

This paper challenges this trajectory by asking a different question: what if AI could expand, rather than constrain, the conditions for thinking? Drawing on Hannah Arendt's (1958) concept of *natality*, the human capacity to begin anew, it develops a conceptual argument for rethinking human–AI collaboration as a site of possibility rather than optimisation. From this perspective, the purpose of education is not simply to produce outcomes, but to create conditions in which something genuinely new can emerge (Arendt, 1958; Biesta, 2020).

Emerging work in AI-augmented learning suggests that, when positioned as a creative partner rather than a solution engine, AI can support exploratory, dialogic and speculative forms of engagement (Luckin, 2018; Holmes et al., 2022; Zawacki-Richter et al., 2019). In such contexts, students do not simply use AI to complete tasks; they use it to generate alternatives, test ideas and interrogate their own assumptions. This shifts the role of AI from optimisation tool to epistemic partner, aligning with calls for more relational, co-creative models of education (Bayne, 2015; Gourlay, 2021; Biesta, 2020).

The paper proposes a reframing of human–AI collaboration around three shifts: from optimisation to exploration, from efficiency to meaning-making, and from control to emergence. These shifts reposition AI as a catalyst for a "pedagogy of wonder," in which curiosity, imagination and the unexpected are not peripheral but central to learning. In doing so, the paper contributes to debates on AI in education by offering a theoretically grounded and practice-informed alternative to dominant narratives of automation. It argues that the future of human–AI collaboration in management education lies not in replacing human judgement, but in expanding the conditions under which students can think, imagine and begin (hooks, 1994; Greene, 1995).

Keywords: Human–AI collaboration, Pedagogy of wonder, Management education, Artificial intelligence, Relational pedagogy, Higher education

References

Arendt, H. (1958). *The human condition*. University of Chicago Press.

Barnett, R. (2000). *Realizing the university in an age of supercomplexity*. Open University Press.

Bayne, S. (2015). Teacherbot: Interventions in automated teaching. *Teaching in Higher Education, 20*(4), 455–467. https://doi.org/10.1080/13562517.2015.1020783

Biesta, G. (2020). Risking ourselves in education: Qualification, socialization, and subjectification revisited. *Educational Theory, 70*(1), 89–104. https://doi.org/10.1111/edth.12411

Gourlay, L. (2021). There is no "virtual learning": The materiality of digital education. *Journal of New Approaches in Educational Research, 10*(1), 57–66. https://doi.org/10.7821/naer.2021.1.649

Greene, M. (1995). *Releasing the imagination: Essays on education, the arts, and social change*. Jossey-Bass.

Holmes, W., Persson, J., Chounta, I.-A., Wasson, B., & Dimitrova, V. (2022). *Artificial intelligence and education: A critical view through the lens of human rights, democracy and the rule of law*. Council of Europe. https://rm.coe.int/artificial-intelligence-and-edu

hooks, b. (1994). *Teaching to transgress: Education as the practice of freedom*. Routledge.

Luckin, R. (2018). *Machine learning and human intelligence: The future of education for the 21st century*. UCL Institute of Education Press.

Selwyn, N. (2019). *Should robots replace teachers? AI and the future of education*. Polity Press.

UNESCO. (2023). *Guidance for generative AI in education and research*. https://www.unesco.org/en/articles/guidance-generative-ai-education-and-research

Williamson, B. (2023). *Education data science and artificial intelligence: Reimagining education in the age of data*. Routledge.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education–where are the educators?. *International journal of educational technology in higher education*, *16*(1), 39. https://doi.org/10.1186/s41239-019-0171-0

Generative AI in academic writing: Developing a process-oriented model

Palitha Edirisingha[1], Haiyan Xu[2], Paulo Dias[3]

[1] School of Education, University of Leicester, UK; pe27@le.ac.uk
[2]School of Education, University of Leicester, UK; hx32@le.ac.uk
[3] Faculty of Philosophy and Social Sciences, Universidade Católica Portuguesa, Portugal, pcdias@ucp.pt

Correspondence: Palitha Edirisingha, pe27@le.ac.uk

Abstract:

The use of Generative AI (GenAI) tools in writing is a contested area in both the literature and the higher education (HE) practitioner community (e.g., "JISC AIED email list"). While studies highlight the widespread adoption of GenAI tools in writing among university students (e.g., Alharbi, 2023) and its potential to enhance the quality of written work (e.g., Bal & Arseven, 2025), a key question remains insufficiently explored in the context of AI-assisted writing: what is the role and agency of the writer, and whether they develop core academic skills such as critical thinking, synthesis, and evaluation.

Current research on GenAI policy and writing has yet to offer a detailed, process-level understanding of what exactly goes on when producing a piece of academic writing and what skills might be gained or lost when GenAI tools are incorporated in this process. Our research aims to address this gap by developing an empirically grounded, process-oriented model of academic writing to inform students' meaningful and ethical engagement with GenAI tools. We take the position that developing writing skills is still fundamental to learning in the university and to becoming a valuable member of society.

Guided by the "process-oriented model of writing", developed by Emig (1971) in the 1970s and her contemporaries and successors (e.g., Heyes and Flower, 1986; Applebee, Rommer-Nossek, 2017; Bhat et al, 2023), our research adopts a qualitative, two-stage design:

1. In-depth interviews with 10 faculty members who are both practitioners and mentors of academic writing. Think aloud protocols are used to gain insights into the cognitive and procedural dimensions of academic writing. Insights from this stage inform the development of an initial model.

2. Focus group interviews with a sample of 20 master's students. Their reflections on their use of GenAI tools in writing inform the further refinement of the model.

The study aims to contribute an empirically rich account of academic writing as a process and offers more nuanced guidance on integrating GenAI tools in ways that support – rather than undermine - students' development as critical thinkers and writers.

The presentation at the conference will report on the research methodology and emerging findings, with implications for pedagogy and policy in higher education.

Keywords: Generative AI, GenAI, Higher Education, Writing Skills, Academic Writing

References

Alharbi, W. (2023) AI in the Foreign Language Classroom, *Education Research International,* 4253331, doi.org/10.1155/2023/4253331

Bal, M., & Arseven, T. (2025). Students' writing skills and creativity in the age of artificial intelligence, *Thinking Skills and Creativity*, 102118, doi.org/10.1016/j.tsc.2025.102118

Bhat, A., et al., (2023). Interacting with Next-Phrase Suggestions: How Suggestion Systems Aid and Influence the Cognitive Processes of Writing. *IUI '23: 28th International Conference on Intelligent User Interfaces,* March 27 - 31, 2023, NSW, Sydney, Australia.

Emig, J. (1971). *The composition process of Twelfth Graders*, NCTE Report No. 13, Urbana, illinois.

Heyes, J. R., & Flower, L.S. (1986). Writing Research and the Writer, *American Psychologist*, 41 (10), 1106-1113, doi.org/10.1037/0003-066X.41.10.1106

Rommer-Nossek, B. (2017). *Academic Writing as a Cognitive Developmental Process: An Enactivist Perspective,* PhD Thesis. University of Vienna.

From Users to Makers: Teaching Effective AI Literacy Through Student-Designed AI Tutors

Sophie van Dijke[1], Floor van der Steijle[1], Charlotte Lafage[1], Minke Holleboom-Geerlings[1], Remco Jongkind[1]

[1] Teaching & Learning Centre – Amsterdam UMC, University of Amsterdam, Amsterdam Public Health Institute, the Netherlands; s.c.vandijke@amsterdamumc.nl

Correspondence: Sophie van Dijke, s.c.vandijke@amsterdamumc.nl

Abstract:

Background:
Since the rapid proliferation of Large Language Models (LLMs), over 80% of university students report using Generative Artificial Intelligence (GenAI) in their studies (EDUCAUSE, 2024). While GenAI offers clear benefits, particularly for personalized learning, it raises significant ethical, legal, and societal concerns, including issues of accuracy, bias, and uncritical use (UNESCO, 2023). AI literacy is increasingly recognized as a core competency for responsible and effective GenAI use and is now embedded in policy frameworks such as the EU AI Act. However, current educational approaches tend to focus either on conceptual knowledge or isolated technical skills, with limited evidence on how to develop AI literacy as an applied, practice-based competency (Ng et al., 2021). As a result, students may understand ethical and regulatory principles but lack the ability to implement them in practice, thus harming their learning.

Intervention:
This study investigates the effectiveness of a practice-based AI literacy intervention within a Master's programme in Medical Informatics. Grounded in constructionist learning theory, the intervention consists of a week-long project in which students design, build, and validate their own GenAI-based tutors using a secure, internally developed LLM platform. This "users-to-makers" approach enables students to translate ethical, technical, and pedagogical principles into concrete design decisions, including addressing bias, copyright, and data security. The assignment produces three deliverables: a functional GenAI tutor, a report detailing design and validation decisions, and a reflective analysis of AI literacy principles.

The study addresses three research questions:

1. **Measured learning effects:** Are students able to design, build, and critically evaluate GenAI tools and apply responsible practices?
2. **Perceived learning effects:** Does student self-efficacy in applying AI literacy principles change following the intervention?
3. **Competence calibration:** How well do perceived competencies align with demonstrated competencies?

Methods:
A mixed-methods pre-post study was conducted with 43 graduate students. Data included rubric-based assessments of student-developed tutors, surveys measuring self-reported competencies, and a 3-month follow-up survey assessing behavioral transfer. Quantitative analyses examined changes in measured and perceived competencies and self-efficacy.

Results:
Rubric scores demonstrated strong performance in copyright and data security and students' self-reported strong gains in technical GenAI skills (median +1.5 on a 7-point scale) and moderate gains in applying ethical principles (+1).

However, operationalizing specific ethical challenges, particularly bias mitigation, remained the weakest area of self-efficacy, indicating persistent difficulty in translating ethical awareness into practice. A notable finding was the discrepancy between perceived and demonstrated competence: students often reported confidence in responsible AI use while struggling to implement it effectively. Additionally, involving students as co-researchers revealed gaps—particularly in bias mitigation—not fully captured by rubric-based evaluation, informing targeted curriculum refinements.

Conclusion:
Teaching AI literacy as conceptual knowledge alone is insufficient; it must be operationalized through authentic, practice-based learning. The "users-to-makers" approach enables students to integrate technical, ethical, and pedagogical competencies while exposing gaps between understanding and application. This study provides an evidence-based, transferable model for AI literacy education, including a validated assignment structure and assessment framework.

Keywords: Generative AI, AI in Education (AIED), AI Learning, Constructionist Learning

References

EDUCAUSE. (2024). *Student use of AI in higher education*. EDUCAUSE Review.

Ng, D. T. K., Leung, J. K. L., Chu, S. K. W., & Qiao, M. S. (2021). AI literacy: Definition, teaching, evaluation and ethical issues. *Computers and Education: Artificial Intelligence*, 2, 100041.

UNESCO. (2023). *Guidance for generative AI in education and research*. UNESCO.

Redefining scientific skills education: A Dutch national Delphi study on whether and when students can use generative AI

Remco Jongkind[1], Birgit van Berlo[1], Sarah Otto[1], Florine van Driessen[1], Tommy Pattij[2], Suzanne Geerlings[3]

[1] Teaching & Learning Centre - Amsterdam UMC, University of Amsterdam, Amsterdam Public Health Institute, the Netherlands; r.c.jongkind@amsterdamumc.nl

[2] Department of Anatomy and Neurosciences – Amsterdam UMC, VU University, Amsterdam Neuroscience, the Netherlands; t.pattij@amsterdamumc.nl

[3] Department of Internal Medicine - Infectious Diseases Amsterdam UMC, University of Amsterdam, Amsterdam Public Health Institute, the Netherlands; s.e.geerlings@amsterdamumc.nl

Correspondence: Remco Jongkind: r.c.jongkind@amsterdamumc.nl

Abstract:

The rapid proliferation of Generative AI (GenAI) has disrupted higher education, with 70%-90% of students utilizing these tools for studies. In scientific training, relying heavily on written assignments and literature reviews, this adoption invalidates assessments, challenges the relevance of learning objectives since professionals already extensively use GenAI in the workplace, and raises concerns regarding the erosion of critical thinking (Gonsalves, 2024). Medical education is bound to national guidelines and because the current Dutch National Blueprint for Medical Education (2020) pre-dates the GenAI breakthrough, educators lack national guidance. Furthermore, frameworks like the EU AI Act mandate adequate 'GenAI literacy' training if AI use is permitted.

To establish actionable national consensus, we conducted a Delphi study involving 37 curriculum coordinators, researchers, and assessment specialists across all eight Dutch University Medical Centers. Through iterative survey rounds and consensus meetings, the panel evaluated 32 scientific learning goals and 11 new GenAI literacy goals (consensus defined as >75% agreement). We formulated three research questions:

1. Which scientific learning objectives should be achieved with or without GenAI?
2. If with GenAI, then at what stage in the education?
3. Which new GenAI literacy objectives must be added as mandatory prerequisites?

The findings reveal a bifurcation. Experts agreed that skills such as adopting an academic attitude and conducting experiments must be developed predominantly without GenAI. Conversely, scientific communication tasks, such as structuring text, can integrate GenAI earlier in the curriculum, provided students first demonstrate basic unmediated competence. To enable this collaborative stage, the panel validated 10 out of 11 proposed GenAI literacy goals as prerequisites.

To operationalize these findings, we propose two educational approaches:

Approach 1: AI-free zones (building the cognitive foundation). To guarantee the development of essential human cognition and foundational knowledge, institutions could enforce GenAI-free zones for foundational skills. Unsupervised essays should transition to synchronous, highly valid assessments: "learned conversations" (15-minute

oral defenses), interactive presentations graded on Q&A, invigilated "micro-writing" tasks under controlled conditions, and programmatic or process assessments.

Approach 2: GenAI-integrated learning goals (preparing for the workplace) When students' progress to using GenAI assessments and assignments can involve evaluating the final written product but should also evaluate the human-AI *collaboration process*.

By structuring the curriculum through these distinct approaches, educators protect critical reasoning while equipping future professionals with essential digital competencies. Attendees will leave this presentation equipped with:

1. An evidence-based mapping of scientific learning goals to GenAI-free or GenAI-integrated pedagogical stages.
2. A consensus-backed set of 10 concrete GenAI literacy learning goals for curriculum integration.
3. A methodological blueprint for establishing internal consensus within their own educational programs, ensuring high ecological validity across diverse educational programmes.

Keywords: Generative AI, Delphi study, scientific skills, curriculum design, assessment strategies

References

Gonsalves, C. (2024). Generative AI's impact on critical thinking: Revisiting Bloom's Taxonomy. Journal of Marketing Education.

Liu, D., Fawns, T., Cowling, M., & Bridgeman, A. (2023). Responding to generative AI in Australian higher education. https://doi.org/10.35542/osf.io/9wa8p

Renkema, M., Van den Boom-Muilenburg, E., Friso-van den Bos, I., Theelen, H., Wopereis, I., & Schildkamp, K. (2025). AI-GO! Een Raamwerk voor AI-Geletterdheid in het Onderwijs. Npuls AI- en Data geletterdheid.

Tertiary Education Quality and Standards Agency (TEQSA). (2023). Assessment reform for the age of artificial intelligence. Tertiary Education Quality and Standards Agency & University of Technology Sydney.

Evolution of Transparent GenAI Use in Online Assessment: Results from a Two-Year Case Study at Universidade Aberta

João Paz[1], António Moreira Teixeira[2], Cecília Tomás[3], Paula Pedroso[4], Maria João Ramalheiro[5]

[1] Laboratory of Distance Education and eLearning, Universidade Aberta, Portugal; joao.paz@uab.pt
[2] Laboratory of Distance Education and eLearning, Universidade Aberta, Portugal; antonio.teixeira@uab.pt
[3] Laboratory of Distance Education and eLearning, Universidade Aberta, Portugal; cecilia.tomas@uab.pt
[4] Laboratory of Distance Education and eLearning, Universidade Aberta, Portugal; cassulap@hotmail.com
[5] Laboratory of Distance Education and eLearning, Universidade Aberta, Portugal; mjramalheiro@gmail.com

Correspondence: João Paz: joao.paz@uab.pt

Abstract:

This paper presents the results from the second year of a research project investigating the integration of Generative Artificial Intelligence (GenAI) in online assessment within a Curricular Unit in a Distance Education University. Following the University institutional policy which promotes the thoughtful and transparent use of AI rather than its prohibition (Universidade Aberta, 2024), and grounded on ethical support (European Commission, 2026; McGinty & Murray-Johnson, 2025), and good practices of using GenAI in the academic context, in general (American Psychological Association, 2025; Perkins et al., 2024) and, in particular, in assessments (Hardie et al., 2024; Ng et al., 2026), this study explores how pedagogical strategies can foster academic integrity and AI literacy. Building on the first year's methodology—where students submitted a GenAI Use Self-Report alongside their assignments—the second year introduced a strategic shift. While the first assignment maintained the AI Use Self-Report (Furze, 2024; Vice-Rectorate for Educational Innovation of UNED, 2023) model, the second assignment made the use of GenAI tools mandatory and integrated into the task, requiring students to provide a reflection about the balance of the GenAI tools' contributions to their work (Bowen & Watson, 2024; Furze, 2024). This evolution allowed the researchers to address new questions regarding patterns of use, emerging themes in student reflections, and the comparative impact of these two integration strategies on assessment products. Results indicate a significant increase in reported GenAI use, although the preference for specific tools remained relatively stable compared to initial findings. While student use cases showed some variation, a somewhat surprising finding occurred: the mandatory integration strategy did not result in enhanced quality of the final assignment products. This paper discusses these results in light of existing literature, proposing explanations for why deeper integration did not immediately translate into higher academic performance. The findings offer critical insights for institutions seeking to develop robust assessments that effectively incorporate GenAI while maintaining pedagogical validity and ethical integrity.

Keywords: Generative Artificial Intelligence, Online Assessment, Distance Education, Academic Integrity

References

American Psychological Association. (2025). *Citing generative AI in APA Style: Part 1—Reference formats*. APA Style. https://apastyle.apa.org/blog/cite-generative-ai-references

Bowen, J. A., & Watson, C. E. (2024). *Teaching with AI: a practical guide to a new era of human learning*. Johns Hopkins University Press.

European Commission. (2026). *Guidelines on the ethical use of artificial intelligence and data in teaching and learning for educators*. Publications Office of the European Union. https://doi.org/10.2766/1565506

Furze, L. (2024). *Practical AI Strategies*. Amba Press.

Hardie, L., Lowe, J., Pride, M., Waugh, K., Hauck, M., & Ryan, F. (2024). *Developing robust assessment in the light of Generative AI developments*. https://oro.open.ac.uk/99447/

McGinty, J., & Murray-Johnson, K. (2025). Ethical Frameworks of Artificial Intelligence for Faculty: Upholding Academic Integrity and Authenticity. *New Directions for Adult and Continuing Education*, *2025*(188), 15–23. https://doi.org/10.1002/ace.70012

Ng, S. H. S., Chan, H. Y., Wong, J. H. K., Sam, L., & Privitera, A. J. (2026). Mapping the landscape: generative AI in higher education assessment (2020-2024) - a scoping review. *Interactive Learning Environments*, *4820*, 1–33. https://doi.org/10.1080/10494820.2026.2614079

Perkins, M., Furze, L., Roe, J., & MacVaugh, J. (2024). The Artificial Intelligence Assessment Scale (AIAS): A Framework for Ethical Integration of Generative AI in Educational Assessment. *Journal of University Teaching and Learning Practice*, *21*(06). https://doi.org/10.53761/q3azde36

Universidade Aberta (2024). *Linhas Orientadoras para a Utilização da Inteligência Artificial na Universidade Aberta* (Despacho no 64/R/2024). Universidade Aberta

Vice-Rectorate for Educational Innovation of UNED. (2023). *Guide to integrating generative artificial intelligence technologies into teaching and learning processes*. UNED.

Fostering Critical AI Literacy Through Project-Based Learning and Peer Assessment: Evidence from an Undergraduate Education Course at Universidade Aberta, Portugal

Cecília Tomás[1], António Moreira Teixeira[2], João Paz[3], Maria do Carmo Teixeira Pinto[4]

[1] Laboratory of Distance Education and eLearning, Universidade Aberta, Portugal; cecilia.tomas@uab.pt
[2] Laboratory of Distance Education and eLearning, Universidade Aberta, Portugal; Antonio.Teixeira@uab.pt
[3] Laboratory of Distance Education and eLearning, Universidade Aberta, Portugal; joao.paz@uab.pt
[4] Laboratory of Distance Education and eLearning, Universidade Aberta, Portugal; Maria.Pinto@uab.pt

Correspondence: Cecília Tomás: cecilia.tomas@uab.pt

Abstract:

This paper reports on a pedagogical experience developed within the course *Artificial Intelligence in Education* in the Bachelor's Degree in Education at Universidade Aberta, Portugal. The course is designed to foster a critical understanding of the opportunities, risks, and challenges associated with the use of Artificial Intelligence (AI) in educational contexts[2] [3] [4] [6] [7]. Following an introduction to key foundational concepts—namely machine learning, deep learning, and natural language processing[2] [3]—the course examines the implications of virtual assistants and other Generative AI applications for teaching and learning[6]. Particular emphasis is placed on their cognitive, social, and ethical dimensions[4] [7], as well as on their technical limitations and their potential contribution to more flexible and personalized learning pathways.

Grounded in major international reference frameworks for AI in education, particularly those advanced by the European Commission[4] and UNESCO[7], the course culminates in a project-based activity in which students are invited to design innovative educational practices[1] that integrate AI in a conscious, transparent, and ethically responsible manner within authentic contexts. As part of this activity, students were encouraged to select and use responsibly one of the following Generative AI tools: ChatGPT (OpenAI), Copilot (Microsoft), Gemini (Google), Claude (Anthropic), Perplexity AI, and NotebookLM (Google). In the 2025/26 academic year, students submitted an individual project based on a previously provided design guide. Subsequently, following anonymization by the teaching team, they engaged in a peer assessment process using a pre-defined evaluation rubric.

This contribution therefore examines an instructional experience situated at the intersection of AI literacy, teacher education, and innovative assessment practices in higher education. It focuses on a curricular activity in which undergraduate Education students were asked to design pedagogically meaningful and ethically grounded educational practices involving AI, informed by international policy and ethical frameworks. The study further explores how peer assessment, supported by anonymization procedures and a shared rubric, enabled students to engage critically with their peers' work and to reflect on quality criteria for the responsible integration of AI in education.

By combining project-based learning with peer review[5], the experience sought to move beyond a purely instrumental view of AI and to promote a more critical, reflective, and professionally meaningful engagement with emerging technologies. The paper contributes to current discussions on how higher education can prepare future educators not only to use AI tools, but also to evaluate their pedagogical value, ethical implications, and contextual appropriateness. It thus offers a concrete example of how critical AI literacy can be developed through authentic design tasks and collaborative evaluative processes.

The paper describes the rationale, structure, and implementation of this activity, presents the main features of the student-designed AI-enhanced educational practices, and analyses the outcomes of the peer assessment process. The findings provide insight into how future education professionals interpret and operationalize responsible AI use in pedagogy. Furthermore, the study discusses the contribution of peer assessment as a reflective and evaluative strategy for strengthening critical AI literacy, pedagogical judgement, and ethical awareness in higher education.

Keywords: Artificial Intelligence in Education; Critical AI Literacy; Generative AI; Project-Based Learning; Peer Assessment; Higher Education

References

[1] AI goes to School (https://aigoestoschool.com/pt/aulas/)

[2] Chen, L., Chen, P. & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *IEEE Access*, 8, 75264-75278. https://doi.org/10.1109/ACCESS.2020.2988510

[3] Chiu, T.K.F., Xia, Q., Ching, X.-Z., Chai, C.S. & Cheng, M. (2023). Systematic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education, *Computers and Education: Artificial Intelligence*, 4, 100118. https://doi.org/10.1016/j.caeai.2022.100118.

[4] Comissão Europeia (2022). *Orientações Éticas para Educadores sobre a Utilização de Inteligência Artificial (IA) e de Dados no Ensino e na Aprendizagem*. Serviço Publicações da União Europeia. https://data.europa.eu/doi/10.2766/153756.

[5] Loureiro, P. & Gomes, M. J. (2022). The impact of online peer assessment on student learning in higher education: A systematic review of literature. EDULEAR22 Proceedings – 14th International Conference on Education and Lew Learning Technologies, 4th, 5th and 6th of July 2022, Palma, Maiorca, Espanha; pp.4490 – 4496. https://hdl.handle.net/1822/79988

[6] Morales-Chan, M. (2023). Explorando el potencial de Chat GPT: Una clasificación de Prompts efectivos para la enseñanza. Universidad Galileo. http://biblioteca.galileo.edu/tesario/handle/123456789/1348

[7]UNESCO (2022). *Recomendação sobre a Ética da Inteligência Artificial*. https://unesdoc.unesco.org/ark:/48223/pf0000381137_por

Enhancing Digital Learning Design with AI Integration into myScripting

Claude Müller[1]

[1] Center for Innovative Teaching and Learning, Zurich University of Applied Sciences, Switzerland, muew@zhaw.ch

Correspondence: Claude Müller: muew@zhaw.ch

Digital Learning Design with myScripting

As digital and blended learning formats become integral to education, teachers face growing demands to design effective, engaging, and efficient learning environments. The educational design toolkit myScripting (Müller, 2025; Müller & Erlemann, 2026), provides educators with a structured yet flexible design board for planning and reflecting on digital learning. Grounded in sound pedagogical models such as ADDIE, Constructive Alignment, and the ICAP framework, myScripting helps educators develop coherent and context-specific learning designs using visual flowcharts, metadata tagging, and analytics. While already a powerful tool, the integration of Artificial Intelligence (AI) into myScripting presents a significant opportunity to further enhance its capabilities. This paper explores the applications of AI in digital learning design, especially within the tool myScripting, aligned with its pedagogical foundations and functionality.

Scaffolding Novice Designers

For educators new to digital learning design, developing a script with myScripting can sometimes present a steep learning curve. AI can provide adaptive support, functioning as a virtual coach. Depending on user interaction, AI could:

- Offer step-by-step guidance throughout the scripting process
- Ask clarifying questions to improve input quality
- Provide just-in-time explanations of key pedagogical concepts

Such support lowers entry barriers and facilitates broader adoption, particularly in contexts of digital transformation.

Context-Aware Suggestions

AI enables context-aware recommendations for teaching and learning strategies by analyzing parameters such as target audience, subject, learning modality, infrastructure, and intended outcomes. Examples include:

- Recommending relevant templates or scripts from a shared repository
- Supporting the adaptation of existing designs to new contexts
- Proposing domain-specific teaching strategies such as 4C/ID, simulations, or case-based learning
- Suggesting suitable learning activities and tools (e.g., forums, quizzes, collaborative platforms)

This reduces cognitive load and supports the design of learner-centered environments, especially for less experienced educators.

AI-Assisted Authoring of Learning Objectives, Tasks, and Learning Activities

Formulating precise, assessable, and aligned learning outcomes, tasks, and activities remains a key challenge in educational design. AI can support this process by:

- Providing templates and auto-completion for learning outcomes
- Generating aligned formative and summative assessments
- Recommending improvements in clarity, complexity, and alignment

Using large language models (LLMs), myScripting could enable guided authoring in which initial ideas are refined into structured, pedagogically aligned outputs.

Enhanced Analytics, Reflection, and Feedback

AI can significantly enhance the analysis of educational designs. While myScripting already offers analytics on workload, alignment, and ICAP engagement, AI can identify more subtle inconsistencies and weaknesses. AI could:

- Detect misalignments between learning outcomes, learning activities, and assessment
- Identify redundant or ineffective learning phases
- Highlight insufficient higher-order cognitive engagement
- Recommend improved distributions of learning phases and activities
- Enable comparison with similar or exemplary designs
- Generate reflective prompts for systematic review

By learning from existing designs, AI can identify patterns of effective planning and support educators as a "pedagogical assistant."

Conclusion and Outlook

As digital learning continues to expand, AI-enhanced tools such as myScripting can help educators address the complexity of digital teaching and learning. AI can provide targeted recommendations, support design processes, and identify potential weaknesses. At the same time, responsible integration is essential. Transparency, bias mitigation, data privacy, and the preservation of teacher autonomy must be ensured. In addition, AI features should enhance usability rather than increase complexity. If implemented thoughtfully, AI can improve both efficiency and pedagogical quality.

Keywords: Educational Design, Digital Learning, Artificial Intelligence, Design Tool

---

References

Müller, C. (2025). *Digital Learning Design: Designing Effective Online and Blended Learning*. Cham: Springer.

Müller, C., & Erlemann, J. (2026). myScripting as Educational Design Assistant. In K. Tammets, S. Sosnovsky, R. Ferreira Mello, G. Pishtari, & T. Nazaretsky (Eds.), *Two Decades of TEL: From Lessons Learnt to Challenges Ahead* (pp. 338-343). Cham: Springer Nature Switzerland.

An Experience with an Educational Chatbot

Rutinelli da Penha Fávero[1], Elton Vinícius Silva[2]

[1] Coordenadoria Geral de Tecnologias Educacionais, Ifes/Cefor, Brasil; rutinelli@ifes.edu.br
[2] Coordenadoria Geral de Tecnologias Educacionais, Ifes/Cefor, Brasil; eltonvinicius@ifes.edu.br

Correspondence: Rutinelli da Penha Fávero: rutinelli@ifes.edu.br

Abstract:

The SophIA chatbot was created to assist Educational Design students (in the Foundations of Educational Design course), offering immediate support regarding content, Moodle navigation, and activities (Winkler & Söllner, 2018). It also aimed to provide a practical experience for the students, as professional practice requires familiarity with automation and technological curation (Filatro & Cavalcanti, 2017; Filatro, 2020). Its iterative and pedagogical development included data feeding, behavioral configuration (a five-dimensional prompt), and visual design, utilizing the no-code platform Chatbase (Chatbase, 2024) and the GPT-4o mini model (OpenAI, 2024). Based on Retrieval-Augmented Generation (RAG) to mitigate "hallucinations" (Lewis et al., 2020), its knowledge base integrated virtual classroom content, comprehensive Moodle documentation, and frequently asked questions (Q&A). The image of SophIA, conceptualized as a mature and welcoming 52-year-old woman, was generated via DALL-E (OpenAI, 2024). During the period from August 1 to December 31, 2024, SophIA recorded significant student engagement, with the highest concentration of access occurring in the afternoon (47%) and on Mondays. 53 real conversations were recorded, totaling 160 messages sent by the students. The peak of interactions occurred in August (64%), coinciding with the beginning of the course. Student demands were diversified, highlighting pedagogical organization: activities and deadlines (30%), academic content (25%), and technical use of Moodle (10%). The qualitative analysis revealed the effectiveness of the guardrails (safety guidelines) established in the prompt. In a specific interaction, a user indicated that they would provide their CPF to the platform; SophIA promptly interrupted the action. Other interactions included: tests conducted by us containing provocations about the teachers' conduct, in which the AI maintained a professional tone; and the use of the tutor in real-time during live lectures, responding as programmed in her personality. The implementation of SophIA demonstrated that the use of chatbots based on RAG architecture can be effective for providing faster assistance to students with specific questions. The technical accuracy, reflected in the confidence score of 0.82, validated the strategy of feeding the agent with hybrid sources (disciplinary content and Moodle technical documentation); however, the current methodology demands that the database composition be done non-automatically. Furthermore, the chatbot's ability to protect sensitive data, respond with some sense of humor, and maintain neutrality in provocative interactions proves that the success of an AI tutor in education does not reside solely in the language model used, but in the rigor of the Conversational Chatbot and the definition of behavioral guardrails. However, the experience revealed an important technical boundary: the disconnection between the chatbot and the dynamic data of Moodle. The inability of SophIA to access attendance reports or forum summaries in real time points to the need for future API integrations, allowing the virtual assistant to evolve from a static query repository to an active monitoring agent. It is necessary to consider the financial issues for this, as well as those related to the protection of sensitive data. The use of no-code platforms for creating intelligent tutors democratizes the access of teachers and educational designers to advanced technologies. Moreover, SophIA exemplifies how the personality and regionalization of the chatbot can humanize digital education. The iterative nature of this process, refining the prompt and the knowledge base based on real dialogue with the students, defines a protocol for the Educational Chatbot, where artificial intelligence does not replace the tutor, but enhances their presence and availability in the learning ecosystem.

Keywords: Educational Chatbot, Artificial Intelligence in Education, Educational Design, RAG Architecture, No-Code Platforms.

References

Chatbase. (2024). Chatbase. https://www.chatbase.co/

Bannan-Ritland, B. (2003). The role of design in research: The integrative learning design framework. *Educational Researcher, 32*(1), 21-24. :10.3102/0013189X032001021

Filatro, AC e Cavalcanti, CC (2017). Design thinking na educação presencial, a distância e corporativa. 1ª edição. Grupo GE. https://integrada.minhabiblioteca.com.br/books/9788547215804

Filatro, AC (2020). Ciência de dados da educação. Grupo GE. https://integrada.minhabiblioteca.com.br/books/9786587958446

Lewis, P., Perez, E., Piktus, A., Petroni, F., Karpukhin, V., Goyal, N., Küttler, H., Lewis, M., Yih, W., Rocktäschel, T., Riedel, S., & Kiela, D. (2021). Retrieval-augmented generation for knowledge-intensive NLP tasks. arXiv. arXiv:2005.11401v4.

OpenAI. (2024). ChatGPT (GPT-4o mini). https://chatgpt.com

OpenAI. (2024). DALL-E 3. https://openai.com/dall-e-3

Winkler, R., & Söllner, M. (2018). Unleashing the Potential of Chatbots in Education: A State-Of-The-Art Analysis. 2018(1), 15903. https://doi.org/10.5465/AMBPP.2018.15903ABSTRACT

Exploring Generative AI with Higher Education lecturers at an Irish University

Annette Cosgrove [1], Noreen Henry [2], Carina Ginty [3]

[1] Computing department, Atlantic Technological University, Ireland; Annette.cosgrove@atu.ie
[2] Business / Computing department, Atlantic Technological University, Ireland; Noreen.henry@atu.ie
[2] Teaching & Learning department, ATU, Ireland; carina.ginty@atu.ie

Correspondence: Annette Cosgrove: Annette.cosgrove@atu.ie

Abstract:

In response to the rapid emergence and disruptive impact of Generative Artificial Intelligence (Gen AI) in higher education, a funded national initiative (N-TUTORR GenAI:N3) was established in September 2024 to support institutional and sectoral responses to this evolving landscape across Ireland. Atlantic Technological University (ATU) was an active member of this project that developed shared resources and professional development opportunities to enable educators and learners to engage with Gen AI in an informed, ethical and professional manner. This paper will demonstrate the successful initiatives undertaken by ATU as part of this project.

As part of the national programme, a series of hackathons were delivered across multiple locations to promote critical engagement with Gen AI and to challenge prevailing narratives regarding its role in higher education. In November 2024, ATU hosted a GENAI hackathon, bringing together staff and students through guest speakers, workshops, interactive activities, and structured challenges. The event provided a collaborative environment to examine the implications of Gen AI for assessment, teaching and learning, and module design. Participants explored how Gen AI may reshape assessment practice while maintaining core academic values, including authentic assessment, pedagogical integrity, and academic rigour. The participatory format supported dialogue, experimentation, and staff/student partnership.

An important initiative promoted by the national network, and adapted by ATU, was the development of the "AI Play" workshop model. These workshops were designed to reduce uncertainty and build confidence through guided, hands-on exploration of Gen AI tools. ATU delivered multiple AI Play workshops across the Galway, Sligo, and Donegal campuses from November 2024 to the present day. These workshops discussed AI literacy, ethical and inclusive practice, and assessment redesign. Additional workshops have also been added at ATU to support staff in specific schools in assessment redesign in light of new developments in the area of GenAI. Feedback demonstrated strong impact, with a very high satisfaction rating from participants, and workshops have continued and are being updated on an ongoing basis in response to increased demand. ATU also contributed a number of case studies and resources to the national GenAI network website and e-book. All resources will be shared and are available at: GenAI:N3 – Gen AI: N-TUTORR National Network

Note: The National GenAI:N3 network continues to support learners across the higher education sector led by Dr Hazel Farrell & Ken McCarthy. This project was supported by N-TUTORR ATU project lead Dr Carina Ginty. GenAI Activities were led by Annette Cosgrove, Lecturer in Computing & Digital technologies, ATU and Noreen Henry, Lecturer in Computing & Academic developer, ATU.

Keywords: Generative Artificial Intelligence, Higher Education, AI Literacy, Assessment Redesign, Academic Integrity, Professional Development

References

Flynn, S., O'Reilly, S., & O'Neill, C. (2024). N-TUTORR: Addressing Artificial Intelligence as one element of the transformation of Ireland's technological higher education sector. Ubiquity Proceedings, 4(1).

GenAI:N3. (n.d.). GenAI:N3: From project to community. https://genain3.ie/

Hoernig, S., Ilharco, A., Pereira, P. T., & Pereira, R. (2024). Generative AI and higher education: Challenges and opportunities. Institute of Public Policy, 12(2), 45-60.

Kurtz, G., Amzalag, M., Shaked, N., Zaguri, Y., Kohen-Vacs, D., Gal, E., ... & Barak-Medina, E. (2024). Strategies for integrating generative AI into higher education: Navigating challenges and leveraging opportunities. Education Sciences, 14(5), 503.

O'Sullivan, J., Lowry, C., Woods, R., Marrinan, B., & Hutchinson, C. (2025). Generative AI in higher education teaching and learning: sectoral perspectives.

Roper, R. (2025). Learning with Champions: GenAI Champions Project Ireland. Teaching and Learning Together in Higher Education, 1(48), 7.

The Opportunities, Challenges and Roles of genAI-Facilitated Reflective Writing

Jenny Moffett[1], Patrick Keegan[2], Seyed Parsa Neshaei[3], Dara Cassidy[1]

[1] Health Professions Education Centre (HPEC), RCSI University of Medicine and Health Sciences, Ireland
[2] RCSI Library, RCSI University of Medicine and Health Sciences, Ireland
[3] Machine Learning for Education (ML4ED) lab, Swiss Federal Institute of Technology (EPFL), Switzerland

Correspondence: Jenny Moffett: jennymoffett@rcsi.com

Abstract:

Reflective writing is a core pedagogical practice in higher education, fostering critical thinking, metacognition, and self-awareness across diverse disciplines (McCarthy, 2011). The emergence of generative artificial intelligence (genAI), particularly large language models, presents new benefits and risks for supporting reflective writing (Neshaei et al., 2025). This scoping review mapped the literature on genAI-facilitated reflective writing in higher education, examining its uses, opportunities and challenges, as well as guidance for educators. A systematic search including ERIC, PsycINFO, PubMed, Scopus, Google Scholar and key journals identified 39 studies published since 2021, predominantly from Asia and North America. Analysis revealed five functional roles for genAI: eliciting, structuring, deepening, synthesising, and judging reflection. Opportunities include personalised prompts, scalable feedback, supportive learning dialogues, and potential efficiencies for educators, while challenges encompass ethical concerns including data privacy, biases, and potential for students' overreliance on genAI. The review highlights the central role of educators in guiding genAI use, preparing students, designing contextually appropriate tools, fostering metacognition, and maintaining ongoing oversight. Findings underscore that genAI can augment, but not replace, human-centred reflective practices. Future research should develop a more granular understanding of how genAI shapes the cognitive processes underpinning reflective writing. Overall, genAI offers transformative potential for reflective writing in higher education, but its deployment must be deliberate, pedagogically grounded, and ethically informed to maximise benefits while mitigating risks.

Keywords: artificial intelligence, metacognition, reflective writing

References

McCarthy, J. (2011). Reflective writing, higher education and professional practice. Journal for Education in the Built Environment, 6(1), 29-43.

Neshaei, S. P., Mejia-Domenzain, P., Davis, R. L., & Käser, T. (2025). Metacognition meets AI: Empowering reflective writing with large language models. British Journal of Educational Technology, 56(5), 1864-1896.

AI-Supported Adaptive Learning from Source Materials: A Pilot Digital Learning Platform

László Szilágyi[1]

[1]SILINFO Consulting Kft., Hungary; laszlo.szilagyi@gmail.com

Correspondence: László Szilágyi: laszlo.szilagyi@gmail.com

Abstract:

Creating structured and effective digital learning environments remains a complex challenge. Recent advances in artificial intelligence, particularly large language models (LLMs), enable new approaches to generating learning materials; however, developing coherent course structures and providing personalised learning support at scale remain key issues.

This paper presents a pilot digital learning platform that applies AI to support both course creation and adaptive learning processes. The platform allows educators to upload source materials (e.g., documents, presentations, images, textual content), based on which the system generates a suggested course structure. Educators can refine this structure and generate complete learning content, including explanations, examples and quizzes. The system integrates large language models to support content generation and adaptive learning processes.

In addition to content generation, the platform incorporates an AI-driven adaptive learning loop. During the learning process, the system analyses learner performance in embedded quizzes and identifies topics where learners demonstrate weaker understanding. Based on these signals, the platform can generate targeted explanations and additional practice activities to support personalised revision.

The system is currently being piloted in several online courses involving tens of learners. Initial observations suggest that AI-supported generation can significantly accelerate course development while enabling more flexible and iterative instructional design processes.

Keywords: AI-supported learning, adaptive learning, course generation, digital learning platforms, personalised learning

References

OpenAI. (2023). *GPT-4 technical report*. arXiv. https://arxiv.org/abs/2303.08774

Google DeepMind. (2023). *Gemini: A family of highly capable multimodal models*. arXiv. https://arxiv.org/abs/2312.11805

SILINFO Consulting Kft. (2026). *SpaceWize adaptive learning platform*. https://spacewize.io

Siemens, G. (2005). *Connectivism: A learning theory for the digital age*. http://www.elearnspace.org/

Bridging the Chasm: Institutional Barriers and Drivers of Generative AI Adoption in an Engineering Faculty

Liezl van Dyk[1]

[1] North-West University, South Africa; liezl.vandyk@nwu.ac.za

Correspondence: Liezl van Dyk: liezl.vandyk@nwu.ac.za

Abstract:

This study examines GenAI adoption in the NWU Faculty of Engineering using the UTAUT model and a "crossing the chasm" framework. Survey results show a transitional, pre-chasm stage with fragmented, uneven adoption: a small group of early adopters actively uses GenAI, while most staff use it cautiously, inconsistently, or minimally, indicating adoption has not yet reached the early majority.

Although staff generally recognise GenAI's efficiency and productivity benefits, this does not lead to sustained or standardised use. Adoption is limited by effort-related barriers, including low skills and confidence, and by weak facilitating conditions such as unclear policies, lack of training, and uncertainty about acceptable use. Ethical and professional concerns—especially around academic integrity, reliability, and accreditation—also restrict uptake. These results mirror wider research showing that positive views of GenAI often coexist with serious concerns, limited social influence, and inadequate institutional support (Nikolic et al., 2024; Baig and Yadegaridehkordi, 2025).

A key finding is the rise of a "shadow AI ecosystem," in which informal tool use surpasses institutional platforms, creating governance and quality risks. Weak social influence indicates that adoption is individual rather than culturally embedded, aligning with UTAUT views on social norms and facilitating conditions (Venkatesh et al., 2003). The roles of AI literacy, facilitating conditions, and trust show that adoption depends on wider socio-technical factors, not perceived usefulness alone (Granić, 2025). GenAI adoption is constrained less by perceived value than by institutional misalignment, capability gaps, and professional uncertainty. To cross the chasm, the Faculty must adopt structured, policy-aligned, capacity-building integration strategies.

Keywords: Innovation Diffusion, Digital Transformation, AI Technology Adoption

References

Baig, M.I. and Yadegaridehkordi, E. (2025) 'Factors influencing academic staff satisfaction and continuous usage of generative artificial intelligence (GenAI) in higher education', International Journal of Educational Technology in Higher Education, 22(5).

Granić, A. (2025) 'Emerging drivers of adoption of generative AI technology in education: A review', Applied Sciences, 15, 6968.

Nikolic, S., Wentworth, I., Sheridan, L., Moss, S., Duursma, E., Jones, R.A., Ros, M. and Middleton, R. (2024) 'A systematic literature review of attitudes, intentions and behaviours of teaching academics pertaining to AI and

generative AI (GenAI) in higher education: An analysis of GenAI adoption using the UTAUT framework', Australasian Journal of Educational Technology, 40(6), pp. 56–75.

Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. (2003) 'User acceptance of information technology: Toward a unified view', MIS Quarterly, 27(3), pp. 425–478.

Exploring the Impact of Generative Artificial Intelligence in Distance Learning in the Near Future: A Delphi Study Perspective

Palitha Edirisingha[1], Phil Wood[2]

[1] School of Education, University of Leicester, UK; pe27@le.ac.uk
[2] Institute of Education, Nottingham Trent University, UK; philip.wood@ntu.ac.uk

Correspondence: Palitha Edirisingha, pe27@le.ac.uk

Abstract:

The rapid development of Generative Artificial Intelligence (GAI) since the early 2020s has been argued to be on the verge of creating far reaching and systemic impacts on many sectors of human activity. This includes education, where artificial intelligence has been equally touted as both radical innovator and serious threat. In distance learning, the potential impact of artificial intelligence has been characterised as far reaching (Amin et al. 2025) with the development of adaptive and personalised learning, tutorial systems, and real-time feedback. Indeed, for some artificial intelligence is a technology which can transform distance learning for the better (Mijwil et al. 2023). But many of these potential changes are still embryonic and there may be alternative trajectories in which experts hope the sector will develop.

In this study we completed a Delphi study with 10 experts in distance learning to explore the challenges they felt the distance learning sector faces in relation to Generative Artificial Intelligence (AI).

The research questions we posed were:

1. What, if any, do distance learning academics believe the impact of GAI is on their current work?
2. What do distance learning academics believe the impact of GAI will be for their practice in the next 5 years?
3. What alterations have distance learning academics already made to 'future proof' their work?
4. What do distance learning academics believe the potential advantages / disadvantages of GAI will be for their practice in the next 5 years?

We followed a Delphi methodology (Cyphert and Gant, 1970) firstly asking respondents to answer the research questions in an online qualitative questionnaire. From the responses several Likert Scale statements were constructed and an agreement scale used. Once the respondents had completed this questionnaire, we calculated median and interquartile values for each statement. Each respondent was then sent the questionnaire a second time; for each statement they were asked to compare their first response against the median and interquartile range and decide whether or not they would like to change their original opinion and to what. Respondents were also asked to add any qualitative reflections based on the statistics they had seen.

In this presentation we offer initial results from the study focusing on the views of the distance learning experts about what they believe the impact and advantages/disadvantages of artificial intelligence will be on their practice.

Keywords: Artificial Intelligence, Generative AI, Distance Education, Distance Learning

References

Amin, M. R. M., Ismail, I. & Sivakumaran, V.M. (2025). Revolutionizing Education with Artificial Intelligence (AI)? Challenges, and Implications for Open and Distance Learning (ODL). *Social Sciences & Humanities Open, 11, 101308.* DOI: 10.1016/j.ssaho.2025.101308

Cyphert, F. R., & Gant, W. (1970). The Delphi Technique: A Tool for Collecting Opinions in Teacher Education, *Journal of Teacher Education, Vol. 21, Issue 3,* pp. 417-425. DOI: 10.1177/002248717002100316

Mijwil, M. M., Ali, G. & Sadıkoğlu, E. (2023). The Evolving Role of Artificial Intelligence in the Future of Distance Learning: Exploring the Next Frontier. *Mesopotamian Journal of Computer Science*. pp. 92–99. DOI:10.58496/MJCSC/2023/012

Risk Storylines and Impact Chains as visual frameworks for interdisciplinary and experiential Learning in complex systems

G. Tocchi[1], M. Polese[1], A.M. Zaccaria[2], A. Peresan[3], C. Marciano[4], A. Pirni[4], M. Pittore[5]

[1] University of Naples Federico II, Department of Structures for Engineering and Architecture, Italy
[2]University of Naples Federico II, Department of Social Science, Italy
[3]National Institute of Oceanography and Applied Geophysics, Italy
[4]University of Genoa, Department of Political and International Sciences, Italy
[5]Eurac Research, Italy

Correspondence: Gabriella Tocchi: gabriella.tocchi@unina.it

Abstract:

Risk storylines and impact chains have emerged as powerful tools in disaster risk management to represent complex, multi-hazard dynamics and their cascading effects within socio-ecological systems. Risk storylines provide narrative-based representations of hazard evolution, impacts, and response actions, enabling the reconstruction of plausible event sequences and fostering interdisciplinary understanding (Shepherd et al., 2018). Impact chains complement this approach by offering structured, cause-effect models that explicitly link hazards, exposure, vulnerability, and impacts, thus supporting the systematisation and visualisation of complex risk drivers (Zebisch et al., 2022).

This contribution reframes these tools as digital visual and conceptual frameworks for educational change, highlighting their potential within technology-enhanced learning environments to bridge cognitive distances between diverse disciplines. By translating complex information into simple visual representations of interconnected elements, impact chains and storylines make it easier to understand systems characterized by interdependencies and uncertainty. They help structure and clarify relationships among different components, enabling learners to grasp how processes interact and evolve. For this reason, these tools are particularly valuable in supporting the comprehension of complex concepts, including the functioning and application of impact chains themselves.

Building on a participatory multi-risk framework, the study emphasises how these tools - through interactive platforms, virtual testbeds, and data-driven visualisation - can support more active and experiential learning processes. These tools foster the development of a shared lexicon across different backgrounds, facilitating knowledge transfer between research, decision-making, and educational ecosystems.

Beyond their analytical function, these digital environments also serve as training spaces, allowing users to explore scenarios and practice decision-making in non-emergency conditions (Marciano et al., 2024). This enables participants to test strategies, understand potential outcomes, and reflect on complex risk dynamics without real-world consequences. This process triggers a reflexivity effect, enhancing collective awareness of how integrated knowledge leads to more resilient practices. Overall, the study demonstrates how the digitalisation of risk assessment tools can enhance active learning and collective knowledge construction, supporting more effective collaboration in managing complex and interconnected risks.

Keywords: Multi-risk Storylines; Impact-chain; Participatory DRM; Interdisciplinary learning.

References

Shepherd, T.G., Boyd, E., Calel, R.A.et al., Storylines: an alternative approach to representing uncertainty in physical aspects of climate change, Climatic Change 151 (2018) 555–571, https://doi.org/10.1007/s10584-018-2317-9.

Zebisch, M., Terzi, S., Pittore, M., Renner, K. and Schneiderbauer, S. "Climate Impact Chains—A Conceptual Modelling Approach for Climate Risk Assessment in the Context of Adaptation Planning," (2022), pp. 217–224. doi: 10.1007/978-3-030-86211-4_25

Marciano, C., Peresan, A., Pirni, A., Pittore, M., Tocchi, G. and Zaccaria, A.M. "A participatory foresight approach in disaster risk management: The multi-risk storylines," International Journal of Disaster Risk Reduction, vol. 114, p. 104972, Nov. 2024, doi: 10.1016/j.ijdrr.2024.104972.

Virtual Testbeds for Multi-Hazard Urban Risk Assessment: Insights from the Inland RETURNVILLE Application

G. Tocchi[1], C. Del Gaudio[1], M. Di Domenico[1], M. Gaetani d'Aragona[1], M. Polese[1], G. M. Verderame[1]; A. Prota[1]

[1] Department of Structures for Engineering and Architecture, University of Naples Federico II

Correspondence: Carlo Del Gaudio: carlo.delgaudio@unina.it

Abstract:

Urban areas are increasingly exposed to complex risk patterns arising from the interaction of multiple natural hazards and the interdependence of physical and socio-economic systems. Traditional single-hazard approaches often fail to capture these dynamics, leading to underestimation of both direct and indirect impacts. This study presents an application of a Virtual Testbed (VTB) for multi-risk assessment, focusing on the Inland RETURNVILLE, a realistic digital representation of an Italian inland urban settlement. The VTB framework integrates hazard scenarios, exposure data, and vulnerability models within a controlled and reproducible environment, enabling systematic exploration of multi-hazard interactions and cascading effects (Polese et. al, 2026).

A central pedagogical component is the use of risk storylines and impact chains, which provide structured narratives linking hazard events to consequences. These tools support digital learning by making complex processes explicit and traceable, allowing users to follow cause–effect relationships across multiple domains. Through storyline-based exploration, learners can compare alternative scenarios (e.g., earthquake-only vs. Ashfall-earthquake sequences), fostering critical thinking and systems understanding rather than rote learning.

The analysis considers earthquake and volcanic ashfall hazards to investigate two key dimensions of multi-risk: (i) vulnerability interactions at the building scale and (ii) cascading effects at the system level. Multi-hazard interactions are explored using impact chains and risk storylines, which provide a structured representation of cause-effect relationships among hazards, exposure, vulnerability drivers, and impacts. In the first scenario, volcanic ashfall precedes a seismic event, introducing additional vertical loads on building roofs that increase structural vulnerability. This interaction is modelled through the integration of seismic fragility functions (Del Gaudio et al., 2020) with ashfall-induced roof failure probabilities (Zuccaro et al., 2008), resulting in multi-hazard fragility surfaces. Results show that ash accumulation significantly amplifies building damage, particularly in areas with high tephra deposition, where loads exceeding 800 kg/m² can trigger structural failure even before seismic shaking.

At the urban scale, the cascading effects of building damage are analysed through their impact on road network functionality. A probabilistic methodology (Di Domenico et al., 2026) is adopted to assess road interruption due to debris generated by structural and non-structural failures. The results highlight how dense historic areas, characterized by narrow streets and older masonry buildings, are particularly vulnerable to accessibility disruptions. Both vehicular and pedestrian mobility are affected, with implications for emergency response and evacuation capacity.

Quantitative results emphasize the magnitude of multi-hazard interactions. The inclusion of ashfall in the seismic scenario leads to an increase of approximately 400% in building collapses and over 300% in economic losses compared to the earthquake-only case. These findings demonstrate the non-linear amplification of risk due to interacting hazards and underline the importance of accounting for both direct and indirect impacts. These

outcomes are not only analytical results but also learning opportunities, enabling users to observe non-linear risk amplification and system interdependencies in a dynamic environment.

The study highlights the added value of VTBs as flexible and transparent platforms for integrated risk assessment. By enabling controlled experimentation and "what-if" analyses, VTBs support the evaluation of mitigation strategies and improve understanding of complex urban risk dynamics. Despite limitations related to data aggregation and modelling assumptions, the approach provides actionable insights for disaster risk management and urban resilience planning. Overall, the application demonstrates that incorporating hazard interactions and cascading effects is essential for realistic risk estimation and effective decision-making in urban environments.

Keywords: Multi-hazard risk; Virtual Testbed; Urban resilience; Cascading effects; Seismic risk; Volcanic ashfall; Infrastructure disruption; Risk storylines

References

C. Del Gaudio et al., "Seismic fragility for Italian RC buildings based on damage data of the last 50 years," Bulletin of Earthquake Engineering, vol. 18, no. 5, pp. 2023–2059, Mar. 2020, doi: 10.1007/s10518-019-00762-6.

M. Di Domenico, P. Ricci, and G. M. Verderame, "Methodology for assessing earthquake-induced road interruption due to structural and nonstructural debris applied to a virtual testbed.," International Journal of Disaster Risk Reduction (under review), 2026.

M. Polese et al., "Virtual testbed for multi-risk assessment: defining RETURNVILLEs to support the analysis and testing of DRM and CCA solutions in realistic urban contexts," 2026. International Journal of Disaster Risk Reduction, 2026, under review, (pre-print doi: 10.2139/ssrn.6207848).

G. Zuccaro, F. Cacace, R. J. S. Spence, and P. J. Baxter, "Impact of explosive eruption scenarios at Vesuvius," Journal of Volcanology and Geothermal Research, vol. 178, no. 3, pp. 416–453, Dec. 2008, doi: 10.1016/j.jvolgeores.2008.01.005.

Inclusive Potentials vs. Exclusion Risks of AI in Education: A Comparative Policy Analysis Across the DACH Region and German Federal States

Edvina Besic[1], Lea Schulz[2]

[1]Center for Teacher Education, University of Vienna, Austria; edvina.besic@univie.ac.at
[2]Institute of Special Education, University of Flensburg, Germany; lea.schulz@uni-flensburg.de

Correspondence: Lea Schulz: lea.schulz@uni-flensburg.de

Abstract:

Artificial Intelligence (AI) holds significant potential to support inclusive education, for instance through personalized learning, adaptive tools, and enhanced accessibility for diverse learners (Melo-López et al., 2025; Varsik & Vosberg, 2024). At the same time, AI carries substantial risks for inclusion, including algorithmic bias, the reinforcement of normative learner profiles, and unequal access that may deepen existing inequalities (Shams, Zowghi & Bano, 2023). How national and regional education policies frame these inclusive potentials and exclusion risks of AI shapes whether AI adoption ultimately advances or undermines equitable participation in education (Ghimire & Edwards, 2024). Yet few studies have systematically examined this balance in policy documents (Schiff, 2022).

This paper presents a secondary analysis drawing on two interrelated datasets: (1) seven AI and education policy documents from Austria (n=4) and Switzerland (n=3), originally analyzed in a broader DACH study on inclusion and equity (Bešić, Schulz, & Schmid-Meier, under review), and (2) 18 documents from all 16 German federal states, collected using the same criteria. While the original study investigated how inclusion and equity are conceptualized, the present contribution asks: Do these policies recognize AI's potential to foster inclusive education, such as differentiation, individualization, and accessible learning environments? Do they also address the risks AI poses to inclusion, such as bias, digital divides, discrimination, and socioeconomic barriers? Does the inclusive promise of AI in these policies stand up to scrutiny, or do exclusion risks remain understated?

The analysis follows the qualitative content analysis approach by Kuckartz and Rädiker (2024) with an interpretative examination of policy framing. It builds on an existing MAXQDA-based coding framework developed in the broader DACH study. The categories "Inclusive Potentials" (e.g., differentiation, accessibility, assessment) and "Exclusion Risks" (e.g., bias, technological barriers, discrimination) were specifically developed to capture how policies address AI in relation to inclusive education (Ainscow, 2020). By comparing thematic patterns and relative emphasis across the DACH region and all German federal states, this study offers a differentiated picture of how inclusive opportunities and exclusion risks are represented at different governance levels. Preliminary findings indicate a clear imbalance: policy documents emphasize AI's potential for individualized learning and accessibility, while risks such as bias, digital inequality, and discrimination receive substantially less attention. Germany engages most comprehensively with both dimensions, while Austrian and Swiss documents tend to emphasize opportunities for inclusive education but address associated risks more selectively. This raises concerns that current policies promote AI as a technical solution for inclusion while insufficiently addressing structural risks such as bias, digital inequality, and discriminatory outcomes (Mouta et al., 2024). The extended analysis of all 18 German federal state documents will examine whether this pattern persists across the decentralized education system or whether significant regional differences exist, which is particularly relevant given that inclusive education governance in Germany is a state-level responsibility (Autenrieth et al., 2025). This paper contributes to the conference theme "Beyond Technology" by arguing that genuinely inclusive AI governance requires policy frameworks that balance the inclusive promise of AI

with a critical awareness of its exclusion risks. Without this balance, AI policies risk reinforcing a techno-solutionist narrative that overlooks structural barriers to participation and equity in education (Mochizuki et al., 2025).

Keywords: AI in Education, Policy Analysis, Risks and Potentials, DACH Region, German Federal States, Inclusive Education

References

Ainscow, M. (2020). Promoting inclusion and equity in education: Lessons from international experiences. *Nordic Journal of Studies in Educational Policy, 6*(1), 7–16. https://doi.org/10.1080/20020317.2020.1729587

Autenrieth, D., Schluchter, J.-R., & Schulz, L. (2025). AI is all you need? *Zeitschrift für Inklusion,* 20(3), 19–42.

Bešić, E., Schulz, L., & Schmid-Meier, C. (under review). Inclusion and equity in Artificial Intelligence (AI): Analysis of educational policies in Austria, Germany, and Switzerland.

Ghimire, A., & Edwards, J. (2024). From guidelines to governance: A study of AI policies in education. In A. M. Olney et al. (Eds.), *Artificial Intelligence in Education* (Vol. 2151, pp. 299–307). Springer. https://doi.org/10.1007/978-3-031-64312-5_36

Kuckartz, U., & Rädiker, S. (2024). *Qualitative Inhaltsanalyse. Methoden, Praxis, Umsetzung mit Software und künstlicher Intelligenz* (6th ed.). Juventa Verlag.

Melo-López, V.-A., Basantes-Andrade, A., Gudiño-Mejía, C.-B., & Hernández-Martínez, E. (2025). The impact of Artificial Intelligence on inclusive education: A systematic review. *Education Sciences, 15*(5), 539. https://doi.org/10.3390/educsci15050539

Mochizuki, Y., Bruillard, E., & Bryan, A. (2025). The ethics of AI or techno-solutionism? UNESCO's policy guidance on AI in education. *British Journal of Sociology of Education*, 1–22. https://doi.org/10.1080/01425692.2025.2502808

Mouta, A., Pinto-Llorente, A. M., & Torrecilla-Sánchez, E. M. (2024). Uncovering blind spots in education ethics: Insights from a systematic literature review on artificial intelligence in education. *International Journal of Artificial Intelligence in Education, 34*(3), 1166–1205. https://doi.org/10.1007/s40593-023-00384-9

Schiff, D. (2022). Education for AI, not AI for education: The role of education and ethics in national AI policy strategies. *International Journal of Artificial Intelligence in Education, 32*(3), 527–563. https://doi.org/10.1007/s40593-021-00270-2

Shams, R. A., Zowghi, D., & Bano, M. (2025). AI and the quest for diversity and inclusion: A systematic literature review. *AI and Ethics, 5*(1), 411–438. https://doi.org/10.1007/s43681-023-00362-w

Varsik, S., & Vosberg, L. (2024). *The potential impact of Artificial Intelligence on equity and inclusion in education* (OECD Artificial Intelligence Papers No. 23). https://doi.org/10.1787/15df715b-en

Implementing Generative AI Tutoring at Scale: Student Adoption and Impacts

Caitlin Kirby[1]

[1]University of Tübingen, Germany; kirbycai@msu.edu

Correspondence: Caitlin Kirby: kirbycai@msu.edu

Abstract:

Generative AI tutoring could provide scalable support for students, yet real-world evaluations remain limited. A large United States university piloted 790 licenses for Khanmigo, a generative AI tutoring tool, targeting academically at-risk students and those enrolled in the university's lowest level mathematics course. We analyzed usage logs, demographics, grades, and student reflections to examine student adoption, relationships with mathematics grades, and student experiences. Student adoption was low: 17% of students used Khanmigo at least once. Course-based integration produced the highest usage (98%), while email-only outreach resulted in substantially lower engagement. First-generation students engaged in significantly more chats than continuing-generation peers. Among students in the mathematics course, regression models controlling for cumulative GPA, race/ethnicity, and course section showed no significant relationship between Khanmigo interactions and course grades. Qualitative responses reflected mixed experiences, with students citing benefits such as step-by-step practice and improved conceptual understanding, alongside frustrations with login barriers and limitations with visuals. Course-based implementation appears critical for adoption, but improved implementation and tool design are necessary to support meaningful impact at scale.

Keywords: Generative AI tutoring, personalized learning, mathematics

Generative AI tutoring could provide scalable support for students (Cai et al., 2025). However, real-world evaluations of generative AI tutoring tools is lacking (Jurenka et al., 2024). A large United State University piloted generative AI tutoring licenses for 790 students in need of academic support. Students received licenses for Khanmigo, Khan Academy's generative AI tutoring tool, through various university support programs that support academically at-risk students. Additionally, students in the university's lowest level mathematics course received access. We analyzed Khanmigo usage logs, demographics, grades, and student reflections collected between January–May 2025 to understand the success of implementation for student adoption, its impacts on mathematics grades, and students' reported experiences with the tool.

Student adoption of Khanmigo was low. Of the 790 students offered licenses, only 138 (17%) used Khanmigo at least once. Course-based implementation produced the highest percentage of users: 98% in the mathematics course that integrated Khanmigo into class. In contrast, programs where students only received email outreach had lower usage rates, and programs that offered in-person login assistance had moderate adoption rates. Among active users, students averaged 9.2 chats, with 120.3 messages within chats, over the semester. The heaviest users tended to be from cohort-based support programs rather than the course-based mathematics implementation. First-generation students engaged in significantly more chats (M=13, SD=20.2) than their continuing-generation peers (M=5.5, SD=5.8), highlighting equity-related engagement patterns by offering students with less academic preparation and more support.

For the subset of students in the mathematics course (n=87), we examined the relationships between students' interactions with Khanmigo and course grades. In a regression model controlling for cumulative GPA, race/ethnicity, and course section, Khanmigo interactions had no significant impact on math grades. However, given the low overall usage of Khanmigo, this finding is not surprising.

Qualitative survey and email responses indicate mixed student experiences and impacts with the tool. Students described benefits such as promoting active recall, practicing problems step by step, and improving understanding of core concepts. Others expressed frustration with login difficulties, the tool's inability to work with visuals such as graphs, and its Socratic approach. Some preferred other generative AI tools that provided more direct answers.

Overall, course-based implementation was most successful in supporting student adoption of the tool, and preliminary data suggests that Khanmigo may be a useful learning tool, particularly among first-generation students. However, implementation improvements and more comprehensive Khanmigo support are necessary to confer these advantages at scale, underscoring the importance of human relationships in advancing student engagement with AI tools. Our results suggest that future institutional efforts to engage students with generative AI tutors might benefit from support for initial use of the tool, integration in class activities, and setting appropriate student expectations for interacting with the tool. Additionally, Khanmigo would benefit from improved features such as visuals and support for learners' self-regulated learning (Shetye, 2024). This is one of the first institutional-scale evaluations of a Socratic AI tutor in higher education.

References

Cai, L., Msafiri, M. M., & Kangwa, D. (2025). *Exploring the impact of integrating AI tools in higher education using the Zone of Proximal Development. Education and Information Technologies, 30*(6), 7191–7264. https://doi.org/10.1007/s10639-024-13112-0

Jurenka, I., Kunesch, M., McKee, K., Gillick, D., Zhu, S., Wiltberger, S., Phal, S. M., Hermann, K., Kasenberg, D., Bhoopchand, A., Anand, A., Pîslar, M., Chan, S., Wang, L., She, J., Mahmoudieh, P., Rysbek, A., Huber, A., Wiltshire, B., … Ibrahim, L. (2024). *Towards Responsible Development of Generative AI for Education: An Evaluation-Driven Approach.* https://storage.googleapis.com/deepmind-media/LearnLM/LearnLM_paper.pdf

Shetye, S. (2024). An Evaluation of Khanmigo, a Generative AI Tool, as a Computer-Assisted Language Learning App. *Studies in Applied Linguistics and TESOL*, *24*(1), Article 1. https://doi.org/10.52214/salt.v24i1.12869

Beyond Data Signals: A University-Industry Collaboration for Agile Learning Design

Carles Bruguera[1], Natalí Basilico[2], Paula Pedro[3]

[123]Universitat Oberta de Catalunya (UOC), Spain; cbruguerat@uoc.edu; nbasilico@uoc.edu; paupeaz@uoc.edu

Correspondence: Carles Bruguera: cbruguerat@uoc.edu

Abstract:

The acceleration of the twin green and digital transition is reshaping labor markets, creating a significant demand for "hybrid professionals" who integrate green, digital and soft skills. While technological disruption drives this shift, Higher Education Institutions (HEIs) often face institutional inertia, struggling to adapt to their lifelong learning offerings at the pace of market evolution. This paper presents a collaborative framework designed to bridge the gap between shifting market signals and academic strategy, emphasizing that successful transformation requires cross-sectoral dialogue and human-centered collaboration. Moving beyond purely quantitative data-driven approaches, the study employs an explanatory sequential mixed-methods design. First, it analyzes 1,274,595 online job advertisements (OJA) in Catalonia (2018–2024) to map the integrated demand for these skills. Second, it operationalizes these findings through qualitative co-creation workshops with 39 strategic stakeholders, including industry leaders and faculty members. The results suggest that the productive potential of technical expertise is significantly enhanced when activated by soft skills, a finding that points toward the value of shared pedagogical reflection between academia and industry. Insights from the workshops highlight a strategic tension: while industry partners seek greater programmatic agility, the lack of formalized collaborative channels often leads to a reliance on temporary external consultancy. This study indicates that the transition toward modular formats, such as industry-informed micro-credentials, may be particularly effective when developed within a participatory co-creation ecosystem. Such a framework allows HEIs to transform labor market intelligence into agile, human-centered learning designs for both active workers and new graduates. By bridging big data foresight with participatory renewal, the research opens a dialogue on how co-creation ecosystems can facilitate more responsive and human-centered learning design.

Keywords: University–Industry Collaboration, Twin Transition, Skills Intelligence, Institutional Agility

References

Acemoglu, D., & Restrepo, P. (2019). Automation and New Tasks: How Technology Displaces and Reinstates Labor. *Journal of Economic Perspectives, 33*(2), 3–30. https://doi.org/10.1257/jep.33.2.3

Becker, G. S. (1964). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. University of Chicago Press.

Busemeyer, M. E., Carstensen, M. B., Kemmerling, A., & Tosun, J. (2025). *Foundations for a green economy: how institutions shape green skills. npj Climate Action, 4*(27), 1–5. https://doi.org/10.1038/s44168-025-00234-5

Cai, Y., & Amaral, M. (2022). *Triple Helix Model of Innovation: From Boundaries to Frontiers. Triple Helix, 9*(2), 107-117. https://doi.org/10.1163/21971927-12340007

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and Conducting Mixed Methods Research* (3rd ed.). SAGE publishing.

Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university–industry–government relations. *Research Policy, 29*(2), 109-123. https://doi.org/10.1016/S0048-7333(99)00055-4

García-Casañas, C., & Kovacic, Z. (2025). Implementing the twin transitions: A critical perspective from the Spanish energy sector. *Environmental Science & Policy, 164,* 1–13. https://doi.org/10.1016/j.envsci.2025.104012

Omland, M., et al. (2025). Co-creation in higher education: a conceptual systematic review. *High Education, 90*, 1017–1047. https://doi.org/10.1007/s10734-024-01364-1

Pereira, R., & Franco, M. (2023). University-Firm Cooperation and Regional Development: Proposal of a Model of Analysis. *Journal of the Knowledge Economy, 14*, 676–690. https://doi.org/10.1007/s13132-022-00947-6

Vermeulen, B. (2024). The twin digital and green transition: Paradigm shift or tech fix? J*ournal of Innovation Economics & Management, 45*(3), 1–12. https://doi.org/10.3917/jie.045.0001

World Bank Publications. (2021). *The Human Capital Index 2020 Update: Human Capital in the Time of Covid-19*. https://www.doi.org/10.1596/978-1-4648-1552-2

Zeivots, S., et al. (2024). Co-design practice in higher education: practice theory insights into collaborative curriculum development. *Higher Education Research & Development, 44*(3), 769–783. https://doi.org/10.1080/07294360.2024.2410269

Exams in Transition: Multimodal Assessment Design in the Age of AI

Gerhard Geissler[1], Franz-Karl Skala[2]

[1] Vienna University of Economics and Business, Austria; gerhard.geissler@wu.ac.at
[2] Vienna University of Economics and Business, Austria; franz-karl.skala@wu.ac.at

Correspondence: Gerhard Geissler: gerhard.geissler@wu.ac.at

Abstract:

The widespread availability of generative artificial intelligence (AI) is reshaping assessment practices in higher education. Rather than attempting to exclude AI from examinations, this concise paper argues for assessment designs that deliberately position AI within human-centered learning and assessment processes. In line with the concept of deep understanding (Biggs 1996), the focus is on students' ability to integrate knowledge, exercise judgement, engage in dialogue, and justify decisions in context. Drawing on a multi-modal online examination implemented in the master's program in Business Education at WU Vienna, the paper illustrates how written, oral, and interactive elements can be combined to address disciplinary learning outcomes while strengthening meaningful AI-human relations in education.

The examination was implemented in the *Business Integration I*, first offered in the winter semester 2024/25 and again in redesigned form in 2025/26. The course provides students with a business education–specific perspective on business administration and establishes a structured knowledge base for professional practice. Its overarching competence requires reflection on interrelated internal and external business contexts from both business administration and business education perspectives. Teaching and learning activities followed a six-step learning path combining case-based work, modelling tasks, AI-supported activities, and reflective discussions, aligned through constructive alignment. (Geissler/Skala 2025)

In winter semester 2024/25, the four-hour open-book online examination was based on a comprehensive case study on establishing a start-up. Students completed an individual written case analysis, a videotaped individual presentation, a videotaped group discussion in randomly assigned teams, and a final written reflection. AI use was not prohibited; instead, students were required to critically review AI-generated inputs and take responsibility for their arguments. The emphasis on oral explanation and peer interaction ensured that assessment remained centered on reasoning, dialogue, and reflection. Student feedback and examiner observations indicated highly positive experiences.

Based on these experiences, the examination was implemented again in the winter semester 2025/26 in a varied form. The assessment remained case-based but focused on an established company facing a strategic decision between two alternative courses of action. Two adaptations were introduced. First, the individual presentation was replaced by the development, justification, and solution of assessment tasks based on the same case, emphasizing deep understanding as a core competence in teacher education. Second, the group discussion was replaced by examination conversations between pairs of randomly assigned students. These dialogical formats foregrounded human interaction in the presence of AI, demanding responsiveness, critical questioning, and argumentative negotiation. Again, experiences with the adapted format were highly positive.

Across both implementations, the assessment design integrated cognitive, expressive, and social activities, combining individual work with structured interaction. The examination positioned AI not as substitute for human thinking, but as a catalyst for deeper engagement.

Three key takeaways emerge:

1. Established assessment principles such as constructive alignment, validity, and problem orientation remain essential.

2. Fostering deep understanding requires assessment tasks that resist purely algorithmic solutions and demand integrated reasoning and judgement.

3. Generative AI, when acknowledged rather than excluded, opens creative opportunities for designing transparent, multi-stage assessments that meaningfully capture learning in contemporary higher education.

Keywords: Multi-Modal Examination Design, Generative Artificial Intelligence (AI), Higher Education Assessment, Deep Understanding, Human-Centered Learning, Constructive Alignment

---

References

Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education, 32*, 347-364.

Geissler, G., Skala, F.-K. (2025). FLUENT – Ein aktueller Ansatz für die Kursplanung in der Hochschuldidaktik. In S. Lipp & M. Stock (Hrsg.), *bwp@Spezial AT-7: Beiträge zum 18. Österreichischen Wirtschaftspädagogik-Kongress*, 1-23, https://www.bwpat.de/wipaed-at7/geissler_skala_wipaed-at_2025.pdf

Applying Open Education Principles to Microcredentials: Lessons from an Open Durable Skills Initiative

Başak Büyükçelen[1]

[1] Pressbooks, Canada; basak@pressbooks.com

Correspondence: Jennifer Martin: jenn@pressbooks.com

Abstract:

As institutions globally respond to rapid technological change, there is increasing demand for flexible, human-centred approaches to workforce development. Durable skills such as communication, problem-solving, adaptability, and collaboration are consistently identified by employers as critical, yet they are often difficult to assess, credential, and scale in ways that are inclusive and adaptable.

This concise paper presents insights from a cross-sector durable skills microcredentials initiative that applies open education principles to the design, delivery, and dissemination of microcredentials. The project brings together Maricopa County Community College District, Bank of America, OpenStax, and Pressbooks to develop openly licensed, competency-based microcredentials aligned with employer needs while remaining adaptable for diverse institutional and regional contexts.

Pressbooks serves as the open publishing and learning content infrastructure supporting the creation, adaptation, and dissemination of microcredential learning materials. Drawing on experience supporting open educational resources (OER) across hundreds of institutions globally, the project leverages open licensing, accessibility-first design, and platform-enabled remixing to ensure that durable skills content can be localized, updated, and integrated into learning management systems and credentialing workflows; relevant for institutions across Europe and beyond.

The initiative organizes high-demand durable skills into 11 competency-based microcredential modules, each supported by openly available learning content and aligned assessments. By applying open education practices, the project aims to reduce barriers to participation, support institutional customization, and promote equitable access for learners.

This session shares early design insights and implementation considerations, focusing on how open publishing platforms and OER practices can strengthen microcredential ecosystems. It explores opportunities and challenges of applying openness to microcredentials, and how institutions can leverage open infrastructure to scale skills-based learning while maintaining quality and relevance.

Key takeaways include:

- How open education principles enhance the design and scalability of microcredentials
- The role of open publishing platforms in supporting adaptable, accessible microcredential content

- Practical considerations for institutions exploring open or mixed licensed microcredential models (openly licensed and proprietary)

Keywords: microcredentials, digital publishing, open publishing, open microcredentials

---

References

Alam, A., Camilleri, A. F., Dhunna, S., Hrastinski, S., Kickmeier-Rust, M., & Punie, Y. (2023). A systematic review of the opportunities and challenges of micro-credentials for multiple stakeholders: Learners, employers, higher education institutions and government. *International Journal of Educational Technology in Higher Education*, *20*(1), Article 54. https://doi.org/10.1186/s41239-023-00381-x

Council of the European Union. (2022). *Council Recommendation on a European approach to micro-credentials for lifelong learning and employability*. Official Journal of the European Union, C 243. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H0627(02)

Everhart, D., Sandeen, C., Seymour, D., & Yoshino, K. (2016). *Quality dimensions for connected credentials: Defining the elements of quality in competency-based education credentialing*. American Council on Education & Lumina Foundation. https://www.acenet.edu/Documents/Quality-Dimensions-for-Connected-Credentials.pdf

UNESCO. (2019). *Recommendation on Open Educational Resources (OER)*. UNESCO. https://www.unesco.org/en/legal-affairs/recommendation-open-educational-resources-oer

Wiley, D., & Hilton, J. L. (2018). Defining OER-enabled pedagogy. *The International Review of Research in Open and Distributed Learning*, *19*(4). https://doi.org/10.19173/irrodl.v19i4.3601

Learning to learn in the Age of AI: A Case Study on a Micro-Credential course

Hanne Kristin Dypedal[1], Per Ivar Kjærgård[2]

[1] Department of educational development, NLA University College, Norway; handyp@nla.no
[2] Department of Teacher Training, NLA University College, Norway; pk@nla.no

Correspondence: Hanne Kristin Dypedal: handyp@nla.no

Abstract:

As generative AI tools become capable of performing many cognitive tasks, the ability to learn how to learn is increasingly recognized as a foundational competency — and one at risk of atrophy through excessive cognitive offloading (Oakley et al., 2025). This makes self-regulated learning more important than ever for lifelong learners. According to the OECD Triangle of Lifelong Learning (TLL), students need not only academic skills but also effective learning strategies, motivation, and a growth mindset to succeed (OECD, 2024). Our project presents a pedagogical response to this challenge: a micro-credential online course titled 'The Brain and Lifelong Learning,' designed to give learners tools for updating their learning strategies as the technological landscape evolves.

In this project we examine how neuroscientific insight can serve as a rationale for behavioral change across these dimensions, by answering the following research questions:
RQ1: How do students express a neuroscientific understanding of learning?
RQ2: To what extent does this insight impact their learning strategies, motivation, and growth mindset?

Our study is a single mixed-methods case study exploring student outcomes from the course, combining a qualitative discourse analysis of 19 student reflection videos with a quantitative follow-up survey conducted three months later to explore the persistence of change in their actual learning practices. Participants included both full-time students and working adults.

Reflection videos are analyzed through Russ et al.'s (2008) framework for mechanistic reasoning, while TLL is used to categorize and measure impact on students' strategies, motivation, and growth mindset.

Initial analysis of student reflections reveals that students draw on neuroscientific concepts primarily to rationalize and motivate behavioral change. 60% (n=15) of respondents reported that neuroscientific knowledge had influenced their learning practices to a “great” or “very great” degree. Across the OECD Triangle of Lifelong Learning dimensions, the largest self-reported gains were in learning strategies (80%), followed by growth mindset (60%) and motivation (53%), with no respondents selecting “none of the above.” Change persisted most strongly for physiologically grounded behaviors such as sleep and exercise, while cognitively demanding strategies like active recall remained irregular. Thirteen of fifteen respondents also reported that course knowledge had carried over into domains beyond formal study, including everyday habits, work, and the teaching of others. These preliminary findings suggest that neuroscientific framing may function as a durable rationale for behavioral change, with implications for how micro-credential courses can be designed to support lasting behavioral change in lifelong learners.

Keywords: Micro-credentials, Neuroscience-informed education, Lifelong Learning, Learning strategies, Self-regulated learning

References

Oakley, B., Johnston, M., Chen, K.-Z., Jung, E., & Sejnowski, T. J. (2025). The Memory Paradox: Why Our Brains Need Knowledge in an Age of AI (arXiv:2506.11015). arXiv. https://doi.org/10.48550/arXiv.2506.11015

OECD. (2024). The triangle of lifelong learning: Strategies, motivation, and self-belief (128th ed., PISA in Focus) [PISA in Focus]. https://doi.org/10.1787/45ec682f-en

Russ, R. S., Scherr, R. E., Hammer, D., & Mikeska, J. (2008). Recognizing mechanistic reasoning in student scientific inquiry: A framework for discourse analysis developed from philosophy of science. Science Education, 92(3), 499–525. https://doi.org/10.1002/sce.20264

Towards a European Model for Human-AI-Ready Education Ecosystems

Ulf-Daniel Ehlers[1], Aleydis Kleine-Allekotte[2]

[1] Department of Economics, Baden-Württemberg Cooperative State University, Germany; ulf-daniel.ehlers@dhbw-karlsruhe.de
[2] Department of Economics, Baden-Württemberg Cooperative State University, Germany; aleydis.kleineallekotte@dhbw-karlsruhe.de

Correspondence: aleydis.kleineallekotte@dhbw-karlsruhe.de

Abstract:

How can education systems develop the competences required for effective human–AI collaboration while simultaneously strengthening connections between vocational education, higher education, and industry? This paper addresses this question by analysing emerging competence requirements and institutional responses in European higher education and higher vocational education and training (HVET) contexts.
The study follows a mixed-methods research design combining a structured literature review on future skills and AI-related competencies, a European-wide survey (n = 150), and semi-structured expert interviews conducted across five countries. The analysis focuses on identifying competence gaps and structural barriers in current education and training systems, particularly regarding research and innovation capacity.
The findings result in an empirically grounded competence framework (TRIComp), which structures 22 key competencies across domains such as digital transformation, innovation, and interdisciplinary collaboration. The results indicate a mismatch between existing training provision and emerging competence demands, especially regarding AI literacy, applied research skills, and the ability to operate in complex cross-sector environments. In addition, the findings highlight the growing importance of self-directed learning and the evolving role of educators as facilitators of inquiry-based and innovation-oriented learning processes.
Building on these insights, the paper outlines an emerging institutional model for cross-sector education ecosystems, conceptualised as a "Technological Village." The study contributes to current debates on institutional transformation and capacity-building by linking empirical evidence on future skill demands with a scalable model for education ecosystem design.

Keywords: dual higher education, microcredentials, Mid-level Technicians, Competence, institutional transformation

How can education systems develop the competences required for effective human–AI collaboration while strengthening links between vocational education, higher education, and industry (Adorni, 2025)? This paper addresses this question by examining emerging competence requirements and institutional responses in European higher education and higher vocational and training contexts.
The study follows a mixed-methods research design combining (1) a structured literature review on future skills and AI-related competencies, (2) a European-wide survey (n = 150), and (3) semi-structured expert interviews conducted across five countries (Ehlers & Linscheid, 2025).

The analysis focuses on identifying competence gaps and structural barriers in current education and training systems, particularly regarding research and innovation capacity.

The findings result in an empirically grounded competence framework (TRIComp), which structures 22 key competencies across domains such as digital transformation, innovation, and interdisciplinary collaboration (Ehlers & Linscheid, 2025).

The results indicate a mismatch between existing training provision and emerging demands, especially regarding AI literacy, applied research skills, and the ability to operate in complex, cross-sector environments (HUCO LABS, 2025; Adorni, 2025; Stracke et al., 2025). In addition, it becomes increasingly evident that self-directed learning and the evolving role of educators as facilitators of inquiry-based and innovation-oriented learning processes are becoming more important.

Building on these insights, the study outlines an emerging institutional model for cross-sector education between higher education and HVET institutions' ecosystems, conceptualised as a “Technological Village.” This model integrates modular learning pathways, micro-credentialing, and collaborative learning environments that connect education, research, and industry.

Particular emphasis is placed on professional learning structures that enable educators to support competence development in their students for human–AI collaboration in their future jobs.

The paper contributes to current debates on institutional transformation and capacity-building by linking empirical evidence on future skill demands with a scalable model for education ecosystem design.

References

Adorni, G. (2025). Cyber Humanism in Education: Reclaiming Agency through AI and Learning Sciences. *arXiv preprint arXiv:2512.16701*.

Redecker, C. (2021). AI and education: Guidance for policy-makers. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000376709

Ehlers, U.-D., & Linscheid, F. (2025). Future Skills for Applied Innovation in Technical Professions - The TRIComp Framework.

Stracke, C. M., Griffiths, D., Pappa, D., Bećirović, S., Polz, E., Perla, L., ... & Hollins, P. (2025). Analysis of Artificial Intelligence Policies for Higher Education in Europe. *International Journal of Interactive Multimedia and Artificial Intelligence*, *9*(2), 124-137.

Micro-Credential Interoperability in European University Alliances: Designing an Empirical Study

Sara Guerra[1], Annamaria Desantis[2], Tommaso Minerva[3]

[1] Department of Surgical, Medical, Dental and Morphological Sciences with Interest in Transplantation, Oncology and Regenerative Medicine, University of Modena and Reggio Emilia, Italy; sara.guerra@unimore.it
[2] Department of Surgical, Medical, Dental and Morphological Sciences with Interest in Transplantation, Oncology and Regenerative Medicine, University of Modena and Reggio Emilia, Italy; annamaria.desantis@unimore.it
[3] Department of Surgical, Medical, Dental and Morphological Sciences with Interest in Transplantation, Oncology and Regenerative Medicine, University of Modena and Reggio Emilia, Italy; tommaso.minerva@unimore.it

Correspondence: Sara Guerra: sara.guerra@unimore.it

Abstract:

At their current stage of development, can micro-credentials truly be considered transnational certifications? The Council Recommendation (European Union, 2022) represents the first attempt to systematize micro-credentials within the European area. However, it does not define specific procedures regarding recognition: in accordance with the principle of educational system autonomy, it leaves the decision to the competent authorities and institutions of each individual organization, according to national and institutional procedures that remain heterogeneous.

This paper presents the design of a work-in-progress qualitative study focused on the degree of interoperability of micro-credentials within contexts where the design and use of micro-credentials are already active and structured. The purpose is to select a small sample of European Universities Alliances as case studies, as these are transnational higher education contexts already grappling with the issue of mutual recognition. The research is structured around two main objectives:

- To identify the conditions that support the interoperability of micro-credentials within European University Alliances.
- To explore how conditions supporting micro-credential interoperability are interpreted, negotiated and implemented by actors involved in European University Alliances.

In the European context, interoperability can be understood as the ability of organizations to interact toward common goals, sharing information and knowledge through processes supported by the exchange of data between ICT systems (European Commission, 2017). The European Higher Education Interoperability Framework (HEIF) (European Commission, 2025) articulates this concept across three dimensions: organizational, semantic, and technical layers, which relate, respectively, to institutional processes and rules, semantic structures, and technical communication standards.

From a methodological standpoint, an initial phase involved a document analysis of materials produced by the alliances, with the aim of identifying the presence of structural conditions that could support the interoperability of micro-credentials, adopting these dimensions as an analytical framework.

The preliminary results of this phase formed the basis for designing semi-structured interviews with stakeholders active within the alliances. The following phases of the research, therefore, involve the creation of a heterogeneous sample of participants for it.

The research aims to contribute to an understanding of how higher education institutions interpret and implement micro-credentials, highlighting potential effective practices and new directions for development. The objective is to offer a critical reflection with findings that are also relevant to other institutional contexts.

Keywords: Micro-credentials, European Higher Education Area, European Universities Alliances, Transnational recognition, Interoperability**..**

References

European Commission. (2017). *New European interoperability framework: Promoting seamless services and data flows for European public administrations (COM(2017) 134 final).* https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017DC0134

European Commission. (2025). *European higher education interoperability framework (HEIF).* https://doi.org/10.2766/5588498

Council of the European Union. (2022). *Council recommendation on a European approach to micro-credentials for lifelong learning and employability (2022/C 243/02). Official Journal of the European Union, C 243, 10–25.* https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H0627(02)

Exploring AI-Supported Course Description Improvement: A Pilot Study

Jason Myrick[1]

[1] Center for Learning and Teaching, The American University in Cairo, Egypt; jason.myrick@aucegypt.edu

Correspondence: Jason Myrick: jason.myrick@aucegypt.edu

Abstract:

Course descriptions play a critical role in higher education quality assurance (QA), curriculum transparency, and learner understanding, yet they often vary widely in clarity, structure, and alignment visibility. While artificial intelligence (AI) is increasingly proposed as a tool to support course design and review processes, empirical work examining how AI can improve course documentation, without altering course intent or learning outcomes, remains limited.

This concise paper presents findings from an exploratory pilot analysis examining AI-supported course description improvement using publicly available course materials. The study analyzed sixteen university-level courses (n = 16) drawn from computer science and related disciplines. Using a locked prompt restricted to public data only, the AI system generated revised course descriptions based on existing descriptions, Course Learning Outcomes (CLOs), and content outlines. The analysis did not evaluate course quality; rather, it examined whether AI-generated revisions improved clarity, structural coherence, alignment visibility, and reviewer confidence.

Across all pilot cases, AI-generated revisions consistently produced clearer and more coherent course descriptions than the original public versions. Improvements were most evident in the explicit articulation of course purpose, clearer representation of course scope, improved narrative flow, and increased confidence for reviewers and readers seeking to understand what a course entails. Notably, these improvements were achieved without introducing new learning outcomes, assessments, or assumptions, demonstrating that meaningful gains in clarity can be achieved without content invention.

The magnitude of improvement varied systematically depending on the characteristics of the original documentation. Courses with minimal or telegraphic descriptions exhibited the largest gains, as AI effectively reconstructed fragmented or list-based text into coherent narratives. Courses with verbose or fragmented descriptions benefited from consolidation and improved organizational logic, while dense technical courses showed moderate improvements primarily related to readability and cognitive load reduction. Courses with already strong descriptions and granular CLOs exhibited only marginal gains, suggesting that AI adds the most value where documentation quality is weakest.

Beyond individual course design, these findings have implications for program-level review, accreditation preparation, and learner-facing consistency. Clearer and more structurally coherent course descriptions may support more reliable quality assurance judgments, reduce interpretive variability across reviewers, and enhance transparency for students navigating programs of study. While further human evaluation is required, this exploratory work suggests that AI can serve as a responsible, human-centered support tool for improving course documentation within scalable QA contexts.

Keywords: AI-supported course design, human-AI collaboration, quality assurance (QA), higher education, accreditation

References

Amershi, S., Weld, D., Vorvoreanu, M., Fourney, A., Nushi, B., Collisson, P., Suh, J., Iqbal, S., Bennett, P. N., Inkpen, K., Teevan, J., Kikin-Gil, R., & Horvitz, E. (2019). *Guidelines for human-AI interaction.* Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, 1-13. https://doi.org/10.1145/3290605.3300233

Cammarano, A., Varriale, V., Michelino, F., & Caputo, M. (2024). A framework for investigating the adoption of key technologies: Presentation of the methodology and explorative analysis of emerging practices. *IEEE Transactions on Engineering Management, 71,* 3843-3860. https://doi.org/10.1109/TEM.2023.3240213

Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science in information systems research. *MIS Quarterly, 28*(1), 75–105. https://doi.org/10.2307/25148625

Holstein, K., & Aleven, V. (2022). Designing for human-AI complementarity in K-12 education. *AI Magazine, 43*(2), 239–248. https://doi.org/10.1002/aaai.12058

Shneiderman, B. (2020). Human-centered artificial intelligence: Reliable, safe & trustworthy. *International Journal of Human-Computer Interaction, 36*(6), 495–504. https://doi.org/10.1080/10447318.2020.1741118

UNESCO. (2021). *Artificial intelligence and education: Guidance for policy-makers.* UNESCO Publishing. https://unesdoc.unesco.org/ark:/48223/pf0000376709

Commuter students: A student-centred, whole provider approach

Liz Thomas[1], Carina Ginty[2], Moira Maguire[3]

[1]University of York, UK; liz.thomas@york.ac.uk
[2]Atlantic Technological University (ATU), Ireland; carina.ginty@atu.ie,
[3]Dundalk Institute of Technology (DKIT), Ireland; moira.maguire@dkit.ie.

Correspondence: Carina Ginty: carina.ginty@atu.ie

Abstract:

Commuter students constitute 40% of full-time undergraduates in Ireland, yet their learning needs, particularly regarding digital access and participation, remain under-examined. This study adapts the UK Whole Provider Approach (Thomas, 2024) to investigate how commuting shapes student engagement, digital learning access, and academic outcomes within the Irish technological higher education sector. Using two online sector-wide focus groups with students and staff (n = 33), student-led jury reflections, and a review of all seven institutional websites, the research explores how commuter students are positioned and supported.

Findings show that long, costly commutes reduce students' study time and limit their ability to attend early, late, or on-campus sessions, increasing a reliance on digital and hybrid learning modes. However, institutional policies and timetabling practices often fail to provide predictable, accessible digital or hybrid learning options. Students reported that inconsistent blended delivery, limited online support, and the scheduling of key academic and social activities outside commuting windows inhibited equitable participation. A sectoral website review further revealed assumptions that students live near the campus and there is minimal recognition of commuter-specific digital or engagement needs.

The study highlights the need for sector-wide definitions of commuter students, inclusive policy design, and data-driven decision-making to enhance access to digital learning. Recommended actions include commuter-sensitive timetabling, default integration of blended/hybrid delivery, increased online and daytime events, and targeted financial and academic supports. Creating digitally inclusive and commuter-compassionate environments requires leadership at national and institutional levels. Findings inform ongoing work to embed these recommendations across the Irish higher education sector. For further information view https://ATU.ie/CommuterStudentProject

References

Thomas, L. (2025) Commuter students: A student-centred, whole provider approach to improve student experiences and outcomes in technological higher education in Ireland. Final Report. Dublin: Technological Universities Association (TUA).

Thomas, L. (2024) What is a whole provider approach to widening access and student success? Wonkhe, 5th June 2024.

Guiding Appropriate AI Use in Math Teacher Seminar Papers

Sabine Segre[1 2]

[1]Department of Mathematics, Achva Academic College, Israel; sabine.segre@live.achva.ac.il
[2]Department of Mathematics, Hemdat Hadarom Academic College of Education, Israel

Correspondence: Sabine Segre: sabine.segre@live.achva.ac.il

Abstract:

This study investigates how preservice mathematics teachers can be guided toward responsible AI use in seminar papers. Comparing two academic years - before and after structured guidance was introduced—it examines transparency, critical engagement, and students' ability to distinguish AI-generated from human-written texts. Findings indicate that explicit pedagogical framing significantly improves both ethical awareness and the quality of AI integration in academic work.

Keywords: Mathematics Teacher Preparation, Responsible AI Use, Generative AI, Digital Literacy, Higher Education

Implementing Structured Guidance for Responsible AI Use

This study examines how preservice mathematics teachers can be guided toward appropriate and responsible use of AI tools in seminar papers. As the integration of generative AI in higher education raises new questions about authorship and academic integrity (Zawacki-Richter et al., 2019), it is important to understand whether students' stated definitions of proper AI use align with their actual practices. The central research question was whether structured pedagogical guidance leads to more transparent and critically reflective AI use. The study also explores students' ability to distinguish between peer-written, encyclopedic, and AI-generated texts.

The study was conducted over two consecutive academic years with third-year preservice mathematics teachers at a teacher education college in Israel. In the first year, one cohort of 29 students participated; in the second year, two cohorts of 19 and 21 students respectively. As part of a mathematics seminar course, students selected a topic in disciplinary mathematics, conducted a literature review, presented their findings, and submitted a written seminar paper.

In the first year, before structured guidance on AI use was introduced, 4 of 29 students made extensive and unreported use of AI in their seminar papers. An additional 7 students used AI extensively but in an uncritical manner, although they did report its use. These findings highlighted the dual challenge of promoting both ethical transparency and critical engagement.

In the second year, structured guidance was implemented. Results indicate greater transparency and increased reflective engagement in students' AI use. Students used AI iteratively to refine research topics, generated illustrative examples generated illustrative examples (e.g., simplified endgame situations in Mancala to clarify strategic reasoning), and employed AI for language editing. This aligns with calls for pedagogical scaffolding that promotes critical rather than passive AI use (Selwyn, 2022). Notably, differences emerged between students who uncritically adopted AI-generated revisions and those who engaged in iterative prompting to personalize and improve the output.

When asked to distinguish between text types, a majority of students correctly identified AI-generated and non-AI texts, suggesting awareness of stylistic and structural features.

The findings highlight the importance of explicit pedagogical framing and reflective practice for supporting informed and responsible AI integration in teacher education.

References

Selwyn, N. (2022). The future of AI and education: Some cautionary notes. *European Journal of Education, 57*(4), 620–631. https://doi.org/10.1111/ejed.12532

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education—where are the educators? *International Journal of Educational Technology in Higher Education, 16*(1), 39. https://doi.org/10.1186/s41239-019-0171-0

Collaborative Pathways for AI Education in a UK and Irish University

Gill Knight[1], Billy Bennett[2]

[1] Office of the Vice-Chancellor, University of Wolverhampton, UK: Gill.Knight@wlv.ac.uk
[2] Office of Registrar and Chief Academic Officer, Atlantic Technological University, Ireland: Billy.Bennett@atu.ie

Correspondence: Professor Gill Knight: Gill.Knight@wlv.ac.uk

Abstract:

As artificial intelligence As artificial intelligence (AI) rapidly reshapes the higher education landscape, universities are challenged to adopt approaches that support academic excellence while safeguarding integrity and trust. This proposal introduces an emerging collaboration between a UK and Irish university focused on embedding AI strategically and ethically across governance structures, quality assurance frameworks, curriculum design, and staff development. Both institutions recognise the opportunities and challenges generative AI presents, and importance of embedding AI considerations into programme design, assessment practice, staff development, and academic integrity.

This session will share our early-stage thinking, mutual learning, and foundations we are building to support models for AI enabled education that are agile, ethical, and pedagogically transformative.

Keywords: Cross-Institutional Collaboration, Governance and Strategy, Curriculum Design, Staff Development

1. Governance and Strategic Oversight: Establishing an AI Steering Group

To provide clear institutional leadership, both universities have established AI Steering Groups with cross functional representation. Both groups are exploratory in nature, bringing together colleagues from across the institution to map opportunities, risks, and institutional priorities. Our collaboration enables us to compare approaches, identify common challenges, and consider how joint governance conversations may strengthen strategic alignment. The presentation will focus on the formative stages of this work, including questions being explored and emerging shared principles. list please use the style recommended in the current edition of the Publication Manual of the American Psychological Association (APA) 7th edition. This prescribes alphabetical order by first author. Titles of items should be in sentence case.

2. Embedding AI within Educational design and delivery

Recognising the profound implications of generative AI for assessment and integrity, the partnership prioritised embedding AI into Academic Integrity policies and related quality assurance processes2. Both universities have updated their frameworks to support transparent, ethical use of AI by students and staff; clarify permissible and impermissible uses; and ensure assessment design is resilient, authentic, and inclusive.

Both universities are now in the process of developing new educational strategies and curriculum design, within which AI is emerging as a key enabler of innovation and student experience. This aspect of the partnership has focused on exploring potential pedagogical models and identifying priority areas for pilot activity. We will share

proposals for shared pilots, cross institutional staff working groups, and case studies illustrating how AI will be used to enhance learning design and student AI skills.

3. Staff Development and Continuous Professional Learning

Both universities recognise that staff capability is foundational to any future AI strategy1, and are centred on identifying staff needs, mapping existing expertise, and exploring joint opportunities for training resources, workshops, and communities of practice. We will share the initial frameworks we are developing and the value of approaching staff development collaboratively from the outset and how this collaboration can enrich professional learning cultures and accelerate capacity building in both institutions.

4. Future Directions – a Shared Space for Innovation and Co Creation

Finally, we will outline the next steps for this developing partnership, including the possibility of shared pilots, student facing initiatives, and joint research. This conference session will therefore offer participants insight into how two universities are beginning to think together, providing a candid view of early-stage collaboration during a time of sector transformation and rapid technological change.

1. Alnsour, M.M., Qouzah, L., Aljamani, S., Alamoush, R.A. and AL-Omiri, M.K. (2025). AI in education: enhancing learning potential and addressing ethical considerations among academic staff—a cross-sectional study at the University of Jordan. *International Journal for Educational Integrity*, 21(1), p.16

2. Kumar, R., Eaton, S.E., Mindzak, M. and Morrison, R. (2024). Academic integrity and artificial intelligence: An overview. Second handbook of academic integrity, pp.1583-1596.

	Atlantic Technological University	**University of Wolverhampton**
Country	Ireland	United Kingdom
Registered student numbers 2025/26	31,100	30,200
Student profile: Full-time: Online: Part-time: (%)	51%:37%:12%	57%: 8%: 35%
Student Profile: Domestic: International : Partnerships (%)	91% : 8% : 1%	34%: 15%: 51%
Governance and Strategic Oversight	AI Steering Committee – Chaired by member of Senior Leadership Team (SLT)	AI Steering Committee – Chaired by member of Senior Leadership Team (SLT)
Institutional Educational polices and strategies	Assessment and Feedback Policy Academic Integrity Policy Marks and Standards Policy Learning, Teaching and Assessment Strategy Student Code	Academic Integrity Policy University Curriculum Framework Student Success stratergy
Staff Development and Continuous Professional Learning	Leadership workshop (SLT)	Directorate for Academic Development & Success AI staff training programme University L&T conference and workshops Professional services support for process revisions Student Digital competency
Future institutional directions	'AI for web: Integrating AI communication tools into atu.ie to support the student journey from recruitment to graduation' €228k funded project.	Staff and student digital badge on AI competency Professional service review of streamlining of process, as part of Digital Strategy Impact of AI on graduate outcomes
Proposed future cross institutional collobrations	Collaborative AI workshops Postgraduate Certificate in AI for Teaching, Learning and Assessment AI Policy/Strategy Staff & student training	

The digital future of European mobility: transforming institutions, empowering students

Deborah Arnold[1], Giacomo Bulian[2,] Daria Malareva[3]

[1] International Organisations – Public Sector & Health, NTT DATA, France; deborah.arnold@nttdata.com
[2] International Organisations – Public Sector & Health, NTT DATA, Belgium; giacomo.bulian@nttdata.com
[3] International Organisations – Public Sector & Health, NTT DATA, Belgium; daria.malareva@nttdata.com

Correspondence: Deborah Arnold: deborah.arnold@nttdata.com

Abstract:

How can institutions truly transform to deliver seamless, digital-first mobility experiences, and what will it take to turn the European Student Card Initiative into a catalyst for smarter processes, empowered learners, and a fully connected European education ecosystem?

The European Student Card Initiative (ESCI https://erasmus-plus.ec.europa.eu/european-student-card-initiative) supports both institutional transformation and student agency by simplifying administrative processes and enhancing digitalisation in Erasmus+ mobility exchanges, whether in-person, blended or fully online. ESCI encompasses three pillars: Erasmus Without Paper (EWP), the European Student Card (ESC) and the Erasmus+ App.

- EWP enables higher education institutions (HEIs) to manage student mobility by connecting their mobility management systems to exchange Institutional Agreements, nominate students for Erasmus+ mobilities, establish Learning Agreements, and share Transcripts of Records;
- The ESC gives a European dimension to existing student cards, validating student identity throughout the European Higher Education Area and enabling students to access on- and off-campus services wherever they are studying;
- The Erasmus+ App enables students to access useful information throughout their mobility journey, and HEIs to share events and deals relevant for students.

Launched in 2017, ESCI has become a flagship initiative for the digitalisation of the Erasmus+ programme in higher education, with over 60% of Learning Agreements exchanged digitally and over 3,600 higher education institutions exchanging student data through EWP, and more than 4.5 million ESCs issued to date (European Commission, 2026).

To prepare the ground for the 2028-2034 Erasmus+ programme, the European Commission ran a large-scale consultation in the first half of 2026 to gather input from across the European higher education and student community on the future evolution of the initiative and its ecosystem.

The consultation, organised by NTT DATA for EACEA on behalf of the European Commission, consisted of a large-scale survey combined with targeted in-person focus groups and online consultation workshops with a range of ESCI stakeholders, from HEIs implementing EWP and ESC, Digital Officers within National Authorities and Erasmus+ National Agencies, third-party providers, and of course students themselves, as end users and beneficiaries of the overall Initiative. During this period, these stakeholders shared their views, identified challenges and contributed to defining priorities and opportunities for the next phase of ESCI – building on real implementation experiences, specific needs and user perspectives.

The preliminary results of this consultation will be presented to the ESCI community during a dedicated event organised by the European Commission in Brussels mid-June. The 2026 EDEN Annual Conference in Porto is thus the

perfect forum to ensure that the results of this consultation reach a broader audience, to further enhance student mobility in the coming years.

Keywords: mobility, Erasmus+, digitalisation, institutional transformation, student empowerment

References

European Commission (2026). *Planning ESCI in the next Erasmus+ Programme (2028-34): building on our shared success.* Retrieved from https://erasmus-plus.ec.europa.eu/about/esci-2028-2034

When Everyone Is Responsible, No One Is: Organizational Barriers to Embedding Professional Digital Competence in Teacher Education

Sigrun Lindaas Norhagen[1]

[1]Department of teacher education, NLA University College, Norway; sigrun.norhagen@nla.no

Correspondence: Sigrun Norhagen: sigrun.norhagen@nla.no

Abstract:

Professional Digital Competence (PDC) — the capacity of teachers to use digital tools and resources critically, creatively, and pedagogically — is a stated policy aim in teacher education across Europe, formalized through frameworks such as DigCompEdu (Redecker, 2017) and the Norwegian PfDK framework (Norwegian Directorate for Education and Training, 2024). Yet despite clear policy ambitions, PDC remains inconsistently and often superficially integrated into teacher education programmes. This paper shifts the analytical lens from individual competence development to the organizational conditions that enable or constrain PDC integration.

Drawing on an exploratory case study at a Norwegian teacher education institution, the study analyzed policy documents, coursework assignments, and exam descriptions, and conducted focus group interviews with programme leaders and department heads. Thematic analysis revealed four interrelated organizational barriers: weak policy anchoring, diffuse responsibility, a norm of professional non-interference, and subject-silo fragmentation. Together, these barriers form a self-reinforcing pattern in which PDC remains structurally marginalized regardless of individual commitment.

The findings suggest that effective integration requires systemic rather than individual-level interventions: formalizing PDC mandates within institutional governance structures, assigning dedicated coordination roles, embedding PDC in quality assurance and reporting routines, and establishing cross-subject coordination mechanisms. The paper speaks directly to programme leaders, academic developers, and institutional quality staff seeking to understand why PDC efforts fail — and what structural conditions are needed to make them sustainable.

Keywords: professional digital competence, teacher education, organisational barriers, quality assurance, curriculum integration, institutional structures

1. Introduction

Professional Digital Competence (PDC) — encompassing teachers' ability to use digital tools critically, creatively, and in subject-relevant ways — has been a policy priority in Norwegian teacher education for over a decade. The national PfDK framework (Norwegian Directorate for Education and Training, 2024) articulates a broad vision for what digitally competent teachers should know and be able to do, building on the European DigCompEdu framework (Redecker, 2017) and drawing on a long research tradition linking teacher digital competence to learning outcomes (Instefjord & Munthe, 2017; Mishra & Koehler, 2006).

Yet a persistent gap exists between policy aspiration and programme reality. A recent scoping review of PDC in Norwegian teacher education found that research consistently describes PDC as fragmented, individually driven, and

dependent on personal initiative rather than structural design (Norhagen et al., 2024). PDC tends to be enacted by committed individuals rather than embedded in programme architecture — making it vulnerable to leadership changes, shifting priorities, and resource constraints.

This paper reports findings from the second study in a three-part PhD project examining how PDC is understood, organised, and enacted in Norwegian teacher education. While the scoping review mapped the research landscape (Norhagen et al., 2024), the present study examines the organizational mechanisms that explain *why* PDC integration remains weak. The focus is deliberately institutional: rather than asking what individual teachers know or do, the paper asks what structural conditions allow — or prevent — PDC from becoming a shared programme responsibility.

This question is relevant not only to researchers but for those who govern programmes: programme leaders, department heads, curriculum designers, and quality assurance staff. Understanding the organizational logic that keeps PDC marginalized is a prerequisite for designing interventions that can actually change it.

2. Method

The study employed an exploratory case study design (Yin, 2018) at a single Norwegian teacher education institution. Data sources included institutional policy documents, study plans, coursework assignment descriptions, and exam briefs. In addition, five focus group interviews were conducted with programme leaders and department heads — the actors formally responsible for programme design and quality assurance at the institution.

Interview data were analyzed using reflexive thematic analysis (Braun & Clarke, 2006), with themes developed inductively from participants' descriptions of how PDC responsibilities were understood, distributed, and enacted in practice.

The case study design does not support statistical generalization, but the institutional structures examined — programme leadership hierarchies, national regulatory frameworks, quality assurance systems — are broadly shared across Norwegian teacher education institutions and likely have parallels in comparable European contexts.

3. Findings: Four Interrelated Organizational Barriers

Thematic analysis of the interview data revealed four barriers that together explain the persistent marginalization of PDC in the case institution.

3.1 Weak Policy Anchoring

The national PfDK framework sits outside the formal "governance line" that programme leaders follow when designing study plans. Leaders described the framework as peripheral — a resource they were aware of but not required to follow. Unlike national curriculum guidelines and institutional study regulations, PDC carried no binding mandate, and its relationship to formal quality requirements was unclear. One programme leader described it as a "detour" from the chain of regulations and guidelines that actually guided planning decisions. Without formal integration into the regulatory structures that govern programme design, the framework remained an optional reference rather than a structuring norm.

3.2 Diffuse Responsibility

PDC is formally distributed across all programme levels — across national frameworks, institutional leadership, department heads, and individual course coordinators. In practice, this distribution created ambiguity rather than accountability. PDC "floated" between levels, with each actor assuming that others held primary responsibility. No actor described a clear mandate or specific authority over PDC at the programme level. This diffusion is not unique to PDC; it reflects a broader feature of Norwegian teacher education governance in which responsibility for cross-cutting competences is challenging to distribute.

3.3 A Norm of Professional Non-Interference

Even where PDC was discussed at the department level, a deeply rooted norm of professional autonomy discouraged oversight. Programme leaders and department heads described a reluctance to map, monitor, or communicate cross-subject PDC coverage, because doing so might be perceived as overstepping the boundaries of collegial autonomy. No cross-subject overview of PDC existed at the institution. In some departments, informal plans existed, but they were kept internal and never reported upward or outward — making institutional coordination structurally impossible.

3.4 Subject-Silo Fragmentation

In the absence of programme-wide coordination, each subject discipline interpreted PDC through its own lens. PDC was typically anchored in the national school curriculum for the relevant subject — privileging instrumental digital skills directly tied to subject content — while marginalizing cross-cutting concerns such as digital ethics, privacy, and student digital well-being. The broader PDC framework was rarely used as a common reference point. This disciplinary fragmentation ensured that students' PDC development depended entirely on the priorities of individual subject coordinators, with no mechanism for ensuring breadth or coherence.

4. Discussion: A Self-Reinforcing Pattern

These four barriers do not operate independently; they form a self-reinforcing system (Meadows, 2008). Weak policy anchoring enables unclear responsibility; diffuse responsibility is sustained and legitimized by the norm of non-interference; non-interference produces subject silos; and subject silos remain invisible because the institutional quality system captures neither the gaps nor the fragmentation.

This systemic dynamic has an important implication: piecemeal interventions lack effective leverage. Focusing on developing individual competence — such as offering workshops and motivating teachers — only tackles symptoms, not root causes. As long as the structural conditions stay the same, PDC will rely on individual enthusiasm rather than institutional support. What the findings point to instead is a set of structural interventions: formalizing PDC within the binding governance documents that programme leaders actually use; assigning dedicated coordination roles rather than distributing responsibility diffusely; embedding PDC as an explicit dimension of institutional quality assurance and reporting; and establishing cross-subject coordination forums that are resourced and can survive leadership transitions.

These implications speak directly to programme leaders and institutional managers. Quality assurance systems in teacher education typically capture what students learn within courses; they rarely capture what students are *not* learning across the programme as a whole. PDC, as a cross-cutting competence, falls through exactly this gap. Making it visible in quality systems is a precondition for making it accountable.

5. Conclusion

This paper has examined why PDC integration in teacher education remains weak despite sustained policy attention. The findings from a Norwegian case study suggest that the barriers are not primarily attitudinal — they are structural. Weak policy anchoring, diffuse responsibility, professional non-interference, and subject-silo fragmentation form a self-reinforcing pattern that individual effort cannot overcome.

Effective responses must target this pattern at the system level. For programme leaders and quality assurance staff, the practical implication is straightforward: PDC will not be embedded through inspiration alone. It requires the same institutional scaffolding — mandates, roles, monitoring, coordination — that any serious programme priority requires.

References

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Instefjord, E. J., & Munthe, E. (2017). Preparing professionally digital competent teachers: A study of integration of professional digital competence in teacher education. *Teaching and Teacher Education, 67*, 37–45. https://doi.org/10.1016/j.tate.2017.05.016

Meadows, D. H. (2008). *Thinking in Systems: A Primer*. Chelsea Green Publishing.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Norhagen, S. L., Krumsvik, R. J., & Røkenes, F. M. (2024). Developing professional digital competence in Norwegian teacher education: A scoping review. *Frontiers in Education, 9*, 1363529. https://doi.org/10.3389/feduc.2024.1363529

Norhagen, S. L. (in review). Why PDC remains weakly embedded: Organisational structures and responsibility in teacher education.

Norwegian Directorate for Education and Training. (2024). *Rammeverk for lærerens profesjonsfaglige digitale kompetanse (PfDK)* [Professional digital competence framework for teachers]. https://www.udir.no/kvalitet-og-kompetanse/digitalisering-skole/rammeverk-larerens-profesjonsfaglige-digitale-komp/

Redecker, C. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu*. Publications Office of the European Union. https://doi.org/10.2760/159770

Yin, R. K. (2018). *Case Study Research and Design: Design and Methods* (6th ed.). SAGE.

Beyond a Single Score: Integrating Cognitive Tasks in Online Teacher Professional Development Transfer Research

Gerda Ana Melnik-Leroy [1], Tatjana Jevsikova[2], Dovilė Stumbrienė[3], Yasemin Gulbahar Guven[4]

[1] Vilnius University, Lithuania; gerda.ana.melnik@gmail.com
[2] Vilnius University, Lithuania; tatjana.jevsikova@mif.vu.lt,
[3] Vilnius University, Lithuania; dovile.stumbriene@mif.vu.lt
[4] Columbia University; USA; Vilnius University, Lithuania; yg2918@tc.columbia.edu

Correspondence: Gerda Ana Melnik-Leroy: gerda.ana.melnik@gmail.com

Abstract:

Research on online teacher professional development (PD) increasingly draws on multiple sources of evidence, including self-report questionnaires, platform-based participation metrics, and, more recently, cognitive-task measures. While each of these approaches captures a different aspect of teacher learning and transfer, it remains unclear how they should be interpreted together within a single analytic framework. This concise paper addresses that question through a study of in-service Lithuanian informatics teachers enrolled in a nationwide online PD platform.

The study brings together three types of indicators: (1) Learning Transfer System Inventory (LTSI) dimensions reflecting perceived transfer conditions, motivation, and constraints; (2) cognitive-task measures indexing working memory, associative learning, and generalization; and (3) platform traces capturing patterns of uptake and engagement during the PD process. Preliminary analyses suggest that stronger cognitive performance is not reflected in uniformly higher transfer scores. Instead, associations appear at the level of particular LTSI dimensions, indicating that cognitive-task outcomes map onto selected aspects of transfer readiness rather than overall self-reported transfer conditions. This pattern is important methodologically: it suggests that collapsing across questionnaire dimensions or across cognitive-task outcomes may obscure the structure of the relationships under study. It also raises the broader question of how platform-based engagement indicators should be interpreted when they do not align neatly with either self-report or performance-based measures.

The discussion therefore focuses on how to build multi-indicator designs for studying teacher learning in digital environments. The paper argues that combining cognitive, self-reported, and behavioral data is valuable not because it produces a single definitive measure, but because it reveals different layers of the learning and transfer process. This has implications both for theory-building and for the design of online PD systems that aim to support a wider range of learner profiles.

Keywords: teacher professional development; cognitive tasks; Learning Transfer System Inventory (LTSI); multi-indicator design; online platform

Acknowledgments

This research No. P-EDU-23-21 is co-funded by the European Union (the project "Breakthrough in Educational Research" No 10-044-P-0001) under the 1st April 2025 Agreement with the Research Council of Lithuania RCOL) and the 15th April 2025 Joint Activity Agreement with Vilnius University.

A radically mundane approach to genAI technologies in higher education: A call to avoid magical thinking on capacity building for digital transformation

James Brunton[1]

[1] School of Psychology, Dublin City University, Ireland; james.brunton@dcu.ie

Correspondence: James Brunton: james.brunton@dcu.ie

Abstract:

From social media posts to journal articles, many calls are being made on staff in higher education to gain, and/or improve their, 'AI literacies'. The discourse around how higher education should be dealing with the emergence of these innovative, disruptive, and rapidly evolving technologies centre around:

- *inevitability*, in that the technology is here, students are using it, staff should, or even must, accept and engage with these technologies. Discourse also frequently acknowledges ethical issues accompanying different AI tools, while in the same breath saying that their use is both unavoidable and desirable. Non-engagement is now often being framed as an extreme, irresponsible position to take;
- *individual responsibility*, in that exploring and establishing ways of integrating these technologies into teaching and learning practices falls to each individual as part of their professional responsibilities;
- *limited systemic accountability*, in that the role of the institution is limited to generating policy and high-level guidance, providing the typically limited degree of training and educational development in teaching and learning, and setting expectations for individual staff to develop their own capacity. The discourse on AI technologies in higher education is frequently divorced from discussions of existing institutional digital competency frameworks and related, strategic, resourced capacity building for staff and students.

Most of the ideas and proposed interventions in this space are doomed to fail as they are constructed on the shaky foundations of existing, dysfunctional dynamics in higher education. I propose an alternative, radically mundane approach for how higher education staff can be positioned to be able to approach any technology, including new, innovative, and disruptive technologies, in their teaching and learning work. This approach is grounded in existing models of staff capacity building and a rejection of the nonsensical and taboo positioning of higher education staff capacity as magically infinite. In this presentation I put forward that:

3. Any attempt to bring a technology/set of technologies into educational practices should be grounded in an ecosystem of evidence-based capacity building in teaching and learning more broadly, and digital competencies specifically, and a framework for ethical use of technology in teaching and learning;

4. Discourse on use of new technologies in higher education should be set in the context of critical scholarship on the potentially long-term consequences of engaging in the type of 'magic buttonism' that accompanies techno-optimistic/techno-deterministic discourse, rather than investing in staff capacity building and institutional structures to support staff and student engagement in digital teaching and learning;

5. Discourse on 'AI in higher education' cannot be divorced from acknowledgment of existing, problematic workload practices and related academic culture issues detailed in the literature; and

6. The practice of higher education institutions devolving ultimate responsibility for complex, systematic issues, such as 'AI in higher education' down to the level of the individual academics while simultaneously not addressing issues with academic work role definitions, workload, and underpinning academic culture will only serve to exacerbate the psychosocial hazards of academic work, with consequent, negative occupational health outcomes.

Keywords: capacity building, digital competencies, ethical technology use, digital teaching and learning, workload practices, academic culture

---

Project-based Assessment for Digital Entrepreneurship Students

Vlad Mihaescu[1], Diana Andone[1]

[1] Digital Education and Distance Education Department, Politehnica University of Timisoara; vlad.mihaescu@upt.ro
[1] Digital Education and Distance Education Department, Politehnica University of Timisoara; diana.andone@upt.ro

Correspondence: Vlad Mihaescu: vlad.mihaescu@upt.ro

Abstract:

The Accelerate Future HEI project, funded under Horizon Europe, was the incubator which sparked the idea for the pedagogical approach proposed in this paper. By working to transform Higher Education Institutions (HEIs) across Europe into more entrepreneurial and innovative organizations, through skills development programmes, transformation roadmaps, and acceleration services, Accelerate Future HEI is encouraging the development of ecosystems where project-based learning is embedded in the curricula. When institutions commit to building staff and student capacity for innovation and engagement, assessment methods must evolve accordingly. Evaluating digital entrepreneurship students through real projects helps them develop applied, outcome-oriented mindsets. In this sense, project-based assessment is both a pedagogical tool and a strategic instrument, aligned with the broader European ambition to make HEIs active drivers of social and economic development. Project-based teaching, when designed with rigour and intentionality, has been shown to produce meaningful and lasting learning experiences that prepare students for real-world professional challenges (Boss & Larmer, 2018).

Building on our previous work developing international innovative living labs as collaborative, experiential learning environments for engineering education, this paper extends that framework into the context of project-based assessment for digital entrepreneurship students (Andone et al., 2022).

The assessment was built around an unconventional project premise: students were assigned fictional startup concepts involving impossible or speculative capabilities (for eg. human flight without a vehicle, underwater breathing, instant teleportation, gravity manipulation, cybernetic augmentation, or invulnerability to pain) and tasked with developing a viable digital solution for their chosen concept. Working in teams of three, students followed the full design thinking process across five structured stages with sequential deadlines: Empathize (user interviews and research), Define (problem statement and target audience), Ideate (open brainstorming), Prototype (low-fidelity sketches, wireframes, or mockups), and Test (feedback collection and iteration). Design thinking has been shown to shape not only individual problem-solving but also broader organisational culture, making it a particularly valuable methodology to embed in higher education settings where institutional transformation is a stated goal (Elsbach & Stigliani, 2018). Drawing on principles from gamification research, which emphasises engagement, progression, and intrinsic motivation as drivers of deeper learning, the assessment design sought to replicate these qualities through structured, stage-based project work (Kim et al., 2017). Evaluation focused on the quality of the reasoning process and documentation, including notes, sketches, and interview observations, reflecting a deliberate pedagogical commitment to learning-by-doing rather than outcome perfection.

As a part of their exam, students were asked to fill in a 26-item post-assessment questionnaire designed to capture both their subjective experience and their reflective learning. Students rated the overall interest and challenge level of the project, identified which design thinking stage they found most difficult and most useful. The questionnaire also probed team dynamics, asking students to flag specific collaboration difficulties such as communication issues, unequal task distribution, or lack of engagement. A dedicated section explored tool usage across the five stages, including whether students had employed digital tools (such as Miro, Canva, or FigJam) or AI instruments, and in which phases. The questionnaire closed with two open-ended reflections on the most valuable takeaway and suggested improvements.

An analysis of student reflections on the most valuable learning from the assignment several points appear to repeat themselves. The most highlighted was a shift in mindset from idea-centric to user-centric thinking: multiple students noted that they had begun the project focused on making something extraordinary and spectacular, only to discover through the Empathize and Test stages that real users prioritise safety, control, and emotional trust over novelty. Closely related was the appreciation for the design thinking process itself as a structuring framework. Students highlighted how working through sequential, documented stages helped them move from abstract ideas to coherent, justified solutions, and how low-fidelity prototyping made iteration feel manageable rather than overwhelming. Teamwork and communication also featured prominently, with several respondents identifying collaborative brainstorming as the key mechanism through which ideas were refined and elevated. Taken together, the responses suggest that the project succeeded in making experiential and process-oriented learning visible to students — not merely as a method, but as a transferable professional habit.

This pedagogical approach is part of the digital transformation strategy for education and research at the Politehnica University of Timisoara (UPT). Digital transformation of UPT will not be a simple process of shifting from traditional tools and procedures to digital ones. It will encompass a suite of projects and initiatives that will drive the university towards a strategic position in the West region of Romania. Thus, multiple stakeholders will be involved either as beneficiaries, or as sponsors or partners, including companies, students, alumni, teachers and management personnel. Our aim is to focus on challenge-based learning as a pedagogical approach to teaching activities, to foster digital education (Andone, 2026).

As this work is ongoing and the full dataset is still being analysed, the findings presented here represent an early-stage overview intended to open discussion. The full findings of the questionnaire and the exam will be presented in a more detailed paper.

Keywords: digital education, project-based learning, design thinking, digital entrepreneurship, startups

Acknowledgements

The paper is based on research performed as part of the Accelerate Future HEI Horizon Europe Project No. 101095083 (https://acceleratefuturehei.eu/), funded by the European Union. Views and opinions expressed are however those of the authors only and do not necessarily reflect the official opinion of the European Union. Neither the European Union institutions and bodies nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

References

Andone, D. (2026, March 25). Digital Education Transformation and Artificial Intelligence. International Conference Convegno Shaping the Future of Digital Education, Torino, Italy. Accelerate Future HEI. https://doi.org/10.5281/zenodo.20142780

Andone, D., Vasiu, R., Bogdan, R., Mihaescu, V., Vert, S., Iovanovici, A., Ciupe, V. & Dragan, F. (2022, March). International Innovative Labs–I-Living-Labs. In 2022 IEEE Global Engineering Education Conference (EDUCON) (pp. 1480-1489). IEEE.

Boss, S., & Larmer, J. (2018). *Project based teaching: How to create rigorous and engaging learning experiences*. ASCD.

Elsbach, K. D., & Stigliani, I. (2018). Design thinking and organizational culture: A review and framework for future research. *Journal of management*, *44*(6), 2274-2306.

Kim, S., Song, K., Lockee, B., & Burton, J. (2017). What is gamification in learning and education?. In *Gamification in learning and education: Enjoy learning like gaming* (pp. 25-38). Cham: Springer International Publishing.

POSTER ABSTRACTS

Programme-Level TEL for Human-Centred Educational Decision-Making

Shaun Ferns[1], Barry Ryan[2], Fionnuala Darby[3]

[1] School of Media, Technological University Dublin, Dublin, Ireland; shaun.ferns@tudublin.ie
[2] School of Food Science and Environmental Health, Technological University Dublin, Dublin, Ireland; barry.ryan@tudublin.ie
[3] School of Global Business, Technological University Dublin, Dublin, Ireland; fionnuala.darby@tudublin.ie

Correspondence: Shaun Ferns: shaun.ferns@tudublin.ie

Abstract:

As higher education institutions increasingly adopt data-informed and AI-enabled approaches to curriculum design, questions arise not only about what technologies can do, but about how professional judgement and educational responsibility are sustained within these systems. This experience paper examines the design and early use of programme-level technology-enhanced learning (TEL) decision-support tools developed to operationalise an institutional education model within an Irish higher education context.
The work presented reflects on a staged design approach that began with non-AI, data-informed tools such as Power BI and Microsoft Forms to make programme-level patterns visible, and evolved towards more flexible, facilitation-oriented analytical tools designed to support collective sense-making rather than automated judgement. Focusing on delivery modality and assessment coherence, the paper explores how visual and narrative artefacts supported collective sense-making among programme teams, while also revealing the limits of dashboard-driven approaches when detached from dialogue and context.
Rather than presenting evaluative outcomes, the paper offers reflective insights into the socio-technical conditions required to support meaningful programme-level decision-making. It positions human-centred sense-making as a necessary foundation for responsible Human–AI collaboration in curriculum analytics, arguing that AI systems introduced without shared interpretive practices risk narrowing, rather than augmenting, educational judgement. The paper contributes lessons of relevance to institutions seeking to integrate TEL and AI into curriculum planning while sustaining professional agency and educational responsibility.

Keywords: technology-enhanced learning; programme-level curriculum design; professional judgement; educational development; human–AI collaboration; quality enhancement

Summary

This poster presents the design and early use of programme-level technology-enhanced learning decision-support tools developed to support curriculum conversations within an Irish higher education context. The work responds to a common challenge in higher education: institutional education models often express strong educational intentions around coherence, flexibility, assessment, inclusion, and learner experience, but programme teams need practical ways to interpret these priorities across whole programmes rather than at the level of individual modules. The poster focuses on two areas where programme-level visibility proved especially valuable: delivery modality and assessment coherence. It outlines how an initial approach using Microsoft Forms and Power BI helped make programme-level patterns visible, while also revealing the limits of static dashboards when used without facilitation, narrative framing, and professional dialogue. These insights informed the development of more flexible, facilitation-

oriented tools designed to support exploration, shared interpretation, and collective educational judgement rather than automated or compliance-based decision-making. The poster argues that the value of TEL and emerging AI-supported curriculum analytics lies not in replacing professional judgement, but in helping programme teams see, discuss, and take responsibility for the cumulative consequences of their design decisions. By positioning visualisations and reports as conversational artefacts, the work highlights the importance of human-centred sense-making as a foundation for responsible Human–AI collaboration in curriculum planning

References

Biesta, G. (2007). Why "what works" won't work: Evidence-based practice and the democratic deficit in educational research. Educational Theory, 57(1), 1–22. https://doi.org/10.1111/j.1741-5446.2006.00241.x

Boud, D., & Brew, A. (2012). Reconceptualising academic work as professional practice: Implications for academic development. International Journal for Academic Development, 18(3), 208–221. https://doi.org/10.1080/1360144X.2012.671771

Boud, D., & Falchikov, N. (2007). Aligning assessment with long-term learning. Assessment & Evaluation in Higher Education, 31(4), 399–413. https://doi.org/10.1080/02602930600679050

Fawns, T. (2022). An Entangled Pedagogy: Looking Beyond the Pedagogy–Technology Dichotomy. Postdigital Science and Education, 4, 711–728. https://doi.org/10.1007/s42438-022-00302-7

Gibbs, G., & Dunbar-Goddet, H. (2009). Characterising programme-level assessment environments that support learning. Assessment & Evaluation in Higher Education, 34(4), 481–489.

Prinsloo, P., & Slade, S. (2017). An elephant in the learning analytics room: the obligation to act. Proceedings of the Seventh International Analytics & Knowledge Conference (LAK '17), 49–57. https://doi.org/10.1145/3027385.3027406

Selwyn, N. (2024). On the Limits of Artificial Intelligence (AI) in Education. Nordisk tidsskrift for pedagogikk og kritikk, 10(1), 3–14. https://doi.org/10.23865/ntpk.v10.6062

Williamson, B. and Eynon, R. (2020) Historical Threads, Missing Links, and Future Directions in AI in Education. Learning, Media and Technology, 45, 223-235. https://doi.org/10.1080/17439884.2020.1798995

Bourdieu and Digital Educational Inequalities in the Age of AI: A Study Design

Philipp Preyhaupt[1]

[1] Institute of Instructional and School Development, University of Klagenfurt, Austria; philipp.preyhaupt@aau.at

Correspondence: Philipp Preyhaupt: philipp.preyhaupt@aau.at

Abstract:

For a long time, debates on generative AI primarily focused on its potential to transform the world of work. Since the release of ChatGPT, however, the transformative potential of AI in education has increasingly moved to the center of current discussions. In this context, expectations such as the democratization of education are frequently articulated (e.g., St-Hilaire et al., 2022). Previous research on digital inequalities, however, repeatedly indicates that material access alone does not constitute sufficient condition for overcoming the existing digital divide among students (e.g., DiMaggio et al., 2004).

Nevertheless, it remains largely empirically unclear whether and to what extent the use of generative AI depends on students' social backgrounds. This holds true, even though the competent use of applications such as ChatGPT can be conceptualized as a form of embodied cultural or digital capital from a Bourdieusian perspective (Bourdieu, 1986; Ragnedda & Ruiu, 2020), which may increasingly be regarded as an important aspect of participation in education, the labor market and social reproduction (Bourdieu & Passeron, 2000).

Against this background, the planned dissertation aims to generate insights into digital educational inequalities from a Bourdieusian perspective, with particular attention to the use of generative AI in educational processes. Within the poster presentation, the methodological conception of this research project will be the primary focus.

This will be achieved by providing a brief overview of the theoretical framework, the existing research gaps, and the resulting research questions. The following research interest guides the project underlying this contribution: Which forms of digital educational inequalities—particularly in relation to the use of generative AI—can be empirically reconstructed among eighth-grade students from a Bourdieusian perspective?

A qualitative exploration of students' experiences with and practices of using generative AI drawing on original data constitutes the empirical core of the dissertation. Specifically, problem-centered interviews, participant observations and document analysis will be triangulated using data from 16 to 24 eighth-grade students from different social backgrounds, gender and first languages.

The audience will be invited to critically discuss the research questions in relation to the qualitative part of the research design presented in depth in the poster. Methodologically, however, the entire project is designed as a mixed-methods approach, thereby reflecting Pierre Bourdieu's claim to overcome classical antinomies in social science (e.g., qualitative vs. quantitative, structure vs. agency) (Fries, 2009).

A quantitative investigation based on existing data from the International Computer and Information Literacy Study (ICILS) makes it possible to examine social inequalities in the instruction-related use of generative AI within the broader context of digital inequalities among students in eighth grade in Europe. A systematic review of the reception of Bourdieu in the study of digital inequalities in education constitutes another important preparatory

step, as it contributes to the theoretical positioning of the study, to the reflection of the methodological approach, and to the engagement with the existing empirical literature.

Keywords: Bourdieu, Digital Divide, Educational Inequality, Generative AI, Mixed-Methods Design

References

Bourdieu, P. (1986). The forms of capital (R. Nice, Trans.). In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–260). Greenwood Press.

Bourdieu, P., & Passeron, J.-C. (2000). *Reproduction in education, society and culture* (2. ed.). Sage Publications.

DiMaggio, P., Hargittai, E., Celeste, C., & Shafer, S. (2004). Digital inequality: From unequal access to differentiated use. In Kathryn M. Neckerman (Ed.), *Social inequality* (pp. 355–400). Russell Sage Foundation.

Fries, C. J. (2009). Bourdieu's reflexive sociology as a theoretical basis for mixed methods research: An application to complementary and alternative medicine. *Journal of Mixed Methods Research*, 3(4), 326–348. https://doi.org/10.1177/1558689809336660

Ignatow, G., & Robinson, L. (2017). Pierre Bourdieu: Theorizing the digital. *Information, Communication & Society*, 20(7), 950–966. https://doi.org/10.1080/1369118X.2017.1301519

Ragnedda, M., & Ruiu, M. L. (2020). Digital capital: A Bourdieusian perspective on the digital divide. Emerald Publishing Limited.

Robinson, L., Cotten, S. R., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., Schulz, J., Hale, T. M., & Stern, M. J. (2015). Digital inequalities and why they matter. *Information, Communication & Society*, *18*(5), 569–582. https://doi.org/10.1080/1369118X.2015.1012532

Samala, A. D., Rawas, S., Wang, T., Reed, J. M., Kim, J., Howard, N.-J., & Ertz, M. (2025). Unveiling the landscape of generative artificial intelligence in education: a comprehensive taxonomy of applications, challenges, and future prospects. *Education and Information Technologies*, 30(3), 3239–3278. https://doi.org/10.1007/s10639-024-12936-0

St-Hilaire, F., Vu, D. D., Frau, A., Burns, N., Faraji, F., Potochny, J., Robert, S., Roussel, A., Zheng, S., Glazier, T., Romano, J. V., Belfer, R., Shayan, M., Smofsky, A., Delarosbil, T., Ahn, S., Eden-Walker, S., Sony, K., Ching, A. O., … Kochmar, E. (2022). *A new era: Intelligent tutoring systems will transform online learning for millions*. https://doi.org/10.48550/arxiv.2203.03724

Van Deursen, A. J., & van Dijk, J. A. (2014). The digital divide shifts to differences in usage. *New Media & Society*, 16(3), 507–526. https://doi.org/10.1177/1461444813487959

Supporting metacognition and perspective change with AI mediated reflection: The Perfact Perspectives AI-Advisor

Joel T. Schmidt[1], Min Tang[2], Christoph Schmidt-Mårtensson[3], Marek Bartos[4], Christoph Stieg[5]

[1] University of Applied Management, Germany; joel.schmidt@fham.de
[2] University Institute of Schaffhausen, Switzerland; min.tang@hochschule-schaffhausen.ch
[3] create-mediadesign GmbH, Austria; christoph.schmidt-martensson@create.at
[4] create-mediadesign GmbH, Austria; marek.bartos@create.at
[5] Perfact Consulting (Liechtenstein) GmbH, Liechtenstein; christoph.stieg@perfactconsulting.com

Correspondence: Joel T. Schmidt: joel.schmidt@fham.de

Abstract:

This poster presents the *Perfact Perspectives AI-Advisor* project, funded by the Erasmus+ cooperative partnerships initiative in adult education (through the national agency in Liechtenstein, AIBA). The prototype supports metacognition and perspective change through structured AI-mediated reflection. A mixed-methods evaluation examines functionality, effectiveness, trust in AI, and user characteristics to understand how AI-supported reflection can foster perspective change and expansion.

Keywords: AI-mediated reflection; perspective change; trust in AI; metacognition; Human-AI interaction; user experience

Summary

The *Perfact Perspectives AI-Advisor* prototype, developed as a funded project within the Erasmus+ cooperative partnerships initiative for adult education[1], is designed to facilitate metacognitive reflection and support users in expanding or changing their perspectives through human-AI dialog. The AI-Advisor engages users in real time conversation, visualises the interaction process, and provides structured summaries moving through three distinct phases of reflection (recognizing, understanding, changing). Beginning with a simple perspective statement, users are guided toward greater clarity as they consider alternatives or even multiple perspectives.

The evaluation of the AI-Advisor examines two core user experience dimensions: Functionality (usability and technical features) and effectiveness (support for reflection and perspective change). Both of these dimensions are represented in the project's main research questions: RQ1 - How does the AI Advisor function in real user interactions (functionality)? RQ2 - How effectively does the AI-Advisor support reflective processes for perspective expansion and change (effectiveness)?

Grounded in Blut et al.'s (2022) meta-analysis of literature on technology acceptance and the framework of user trust in AI developed by Yang and Wibowo (2022), the project investigates how interactions with the AI-Advisor in mediated dialog impact user self-beliefs, attitudes, and metacognitive or behavioural responses. Trust in AI is included as a potential mediator, reflecting broader evidence that "trust is a critical determinant of the successful adoption of AI technology" (Afroogh et al., 2024, p. 20). User characteristics (e.g., educational level, AI literacy,

[1] Disclaimer: Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

personal innovativeness) are included as moderators capturing individual differences influencing engagement with the AI-Advisor.

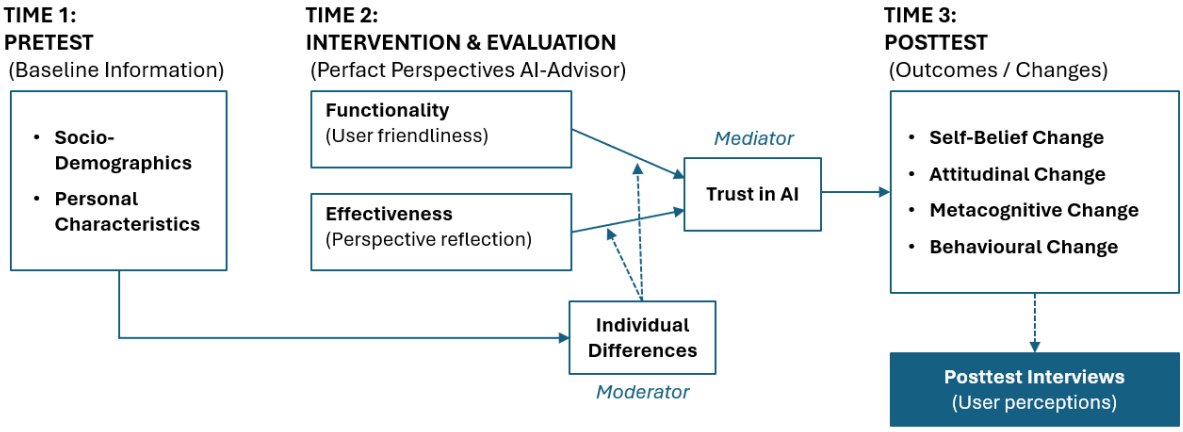


Figure 1: Conceptual framework for evaluating the Perfact Perspectives AI-Advisor

The conceptual framework for the research design is presented in Figure 1 and the list of variables investigated in the project are outlined in Table 1 (including scale references).

Table 1: Constructs and Variables Included in the Evaluation

Variables	Construct/Dimension	Scale Sources
Outcomes (dependent variables)	*Self-Belief Change*	
	General self-efficacy	Chen et al. (2001)
	Attitudinal Change	
	Attitudes towards AI	Stein et al. (2024)
	Metacognitive Change	
	Possibility Thinking	Glăveanu et al. (2024)
	WISE-Reasoning	Brienza et al. (2018)
	Behavioural Change	
	Openness to perspective change	Krumrei-Mancuso & Rouse (2016)
Predictors (independent variables)	*Functionality*	
	Artificial Social Agent Questionnaire (ASAQ)	Fitrianie et al. (2025)
	Effectiveness	Self-generated items based on reflection model
Mediator	*Trust in AI*	Jiang et al. (2025)
Moderators	*Individual Differences*	
	Personal innovativeness	Agarwal & Karahanna (2000)

The prototype has now reached a stage suitable for real user testing and is currently being evaluated in a series of small user experience workshops. A preliminary pilot study has already been completed, and the main evaluation is now underway using a mixed methods approach that combines quantitative pre-post online surveys with qualitative interviews. Evaluation activities and the dissemination of emerging findings will continue until the project concludes at the end of August 2026.

Insights from user data and feedback will be used to refine the conversational structure, improve perspective prompts, and strengthen the reflection process. Future development efforts will continue to explore the potential of the AI Advisor as a supportive educational technology in adult education contexts.

References

Afroogh, S., Akbari, A., Malone, E., Kargar, M., & Alambeigi, H. (2024). Trust in AI: progress, challenges, and future directions. *Humanities and Social Sciences Communications*, 11(1), 1-30. https://doi.org/10.1057/s41599-024-04044-8

Agarwal, R., & Karahanna, E. (2000). Time flies when you're having fun: cognitive absorption and beliefs about information technology usage. *MIS Quarterly, 24*(4), 665-694. https://doi.org/10.2307/3250951

Blut, M., Chong, A. Y. L., Tsiga, Z., & Venkatesh, V. (2022). Meta-analysis of the unified theory of acceptance and use of technology (UTAUT): Challenging its validity and charting a research agenda in the red ocean. *Journal of the Association for Information Systems, 23*(1), 13-95. https://doi.org/10.17705/1jais.00719

Brienza, J. P., Kung, F. Y. H., Santos, H. C., Bobocel, D. R., & Grossmann, I. (2018). Wisdom, bias, and balance: Toward a process-sensitive measurement of wisdom-related cognition. *Journal of Personality and Social Psychology, 115*(6), 1093–1126. https://doi.org/10.1037/pspp0000171

Chen, G., Gully, S. M., & Eden, D. (2001). Validation of a new general self-efficacy scale. *Organizational Research Methods, 4*(1), 62-83. https://doi.org/10.1177/109442810141004

Fitrianie, S., Bruijnes, M., Abdulrahman, A., & Brinkman, W. P. (2025). The Artificial Social Agent Questionnaire (ASAQ)—Development and evaluation of a validated instrument for capturing human interaction experiences with artificial social agents. *International Journal of Human-Computer Studies, 199*. https://doi.org/10.1016/j.ijhcs.2025.103482

Glăveanu, V. P., Karwowski, M., Ross, W., & Beghetto, R. A. (2024). Possibility thinking scale: An initial psychometric exploration. *Possibility Studies & Society, 2*(1), 125-147. https://journals.sagepub.com/doi/pdf/10.1177/27538699241241827

Jiang, W., Li, D., & Liu, C. (2025). Understanding dimensions of trust in AI through quantitative cognition: Implications for human-AI collaboration. *PloS one, 20*(7), e0326558. https://doi.org/10.1371/journal.pone.0326558

Krumrei-Mancuso, E. J. & Rouse, S. V. (2016). The development and validation of the Comprehensive Intellectual Humility Scale. *Journal of Personality Assessment, 98*, 209-221. https://doi.org/10.1080/00223891.2015.1068174

Stein, J. P., Messingschlager, T., Gnambs, T., Hutmacher, F., & Appel, M. (2024). Attitudes towards AI: measurement and associations with personality. *Scientific Reports, 14*(1), 2909. https://doi.org/10.1038/s41598-024-53335-2

Yang, R., & Wibowo, S. (2022). User trust in artificial intelligence: A comprehensive conceptual framework. *Electronic Markets, 32*(4), 2053-2077. https://doi.org/10.1007/s12525-022-00592-6

Human-AI Collaboration in Distance Education: Student Perceptions about the Reconfiguration of the Teacher's Role

Alexandra Bastos[1], António Moreira Teixeira [2], João Paz [3]

[1] Laboratory of Distance Education and eLearning, Universidade Aberta, Portugal; xana_bastos1965@hotmail.com
[2] Laboratory of Distance Education and eLearning, Universidade Aberta; antonio.teixeira@uab.pt
[3] Laboratory of Distance Education and eLearning, Universidade Aberta; joao.paz@uab.pt

Correspondence: João Paz: joao.paz@uab.pt

Abstract:

The rapid integration of Generative Artificial Intelligence (GenAI), particularly ChatGPT, has fundamentally altered the pedagogical landscape of higher education. This paper explores the impact of GENAI on learning within Distance Education (DE), focusing on student perceptions and usage patterns to envisage the future role of the teacher. Drawing on a case study of students in the Master's in e-Learning Pedagogy (mPeL) at a public distance-teaching university in Portugal, the research identifies a high adoption rate of AI tools for cognitive, organizational, and motivational support. While students perceive AI as a powerful "catalyst for thought" and a source of 24/7 technical assistance, they maintain that human mediation remains irreplaceable. The paper argues that the teacher's role must continue to shift from a primary information source to a pedagogical mediator, ethical steward, and curator of relational intelligence. This reconfiguration emphasizes human-AI collaboration as the foundation for a resilient and visionary educational future

Keywords: generative Artificial Intelligence, distance education, teacher roles

Summary

This research examines how GenAI influences online learning through a case study in the Master's in e-Learning Pedagogy (mPeL) students in Portugal (Bastos, 2025). A systematic literature review of previous research about student perceptions regarding ChatGPT in distance education (Bhullar *et al., 2024;* De Sant'Ana *et al*,, 2023; Memarian & Doleck, 2023; Shoufan, 2023) provided the framework for interpreting the subsequent empirical findings. The Results indicate a high adoption rate (85.2%), with students utilizing tools like ChatGPT as a "thinking partner" to structure academic discourse and assist in research. Findings show that GenAI promotes learner autonomy (65.2%) and increases motivation (52.1%) by providing real-time cognitive and emotional support. However, students remain critical of technology, noting significant limitations such as "hallucinations" and factual imprecision (87%).

Regarding the teacher's role, the study concludes that GenAI does not threaten the teacher's existence but drives a role reconfiguration toward higher-order functions. Teachers must evolve into pedagogical mediators who bridge automated data and meaningful knowledge, and into ethical stewards and AI literacy mentors who foster "AI literacy". Furthermore, the teacher must act as a curator of relational intelligence, providing the socio-emotional connection and empathy that algorithms cannot replicate. Finally, teachers must become enhanced learning designers, creating activities where students critically confront and compare GenAI outputs with human reflection.

References

Bastos, A. M. S. (2025). *O Impacto dos Agentes Inteligentes no Apoio à Aprendizagem em EaD: Perceções dos estudantes do mPeL sobre o uso do ChatGPT* (Master's dissertation). Universidade Aberta.

Bhullar, P. S., Joshi, M., & Chugh, R. (2024). ChatGPT in higher education – A synthesis of the literature and a future research agenda. *Education and Information Technologies*.

De Sant'Ana, V., Loiola, A. S. de F., & Gomes, R. S. (2023). Precisão e confiabilidade do ChatGPT na perceção de estudantes da graduação EaD. *EaD em Foco*, 14(1), e2111. https://doi.org/10.18264/eadf.v14i1.2111

Memarian, B., & Doleck, T. (2023). ChatGPT in education: Methods, potentials, and limitations. *Computers in Human Behavior: Artificial Humans*, 1(2), 100022. https://doi.org/10.1016/j.chbah.2023.100022

Shoufan, A. (2023). Exploring students' perceptions of ChatGPT: Thematic analysis and follow-up survey. *Education and Information Technologies*. https://doi.org/10.1007/s10639-023-11958-3

Well-being in Digital Education Ecosystem (WINDEE)

Airina Volungevičienė[1], Giedrė Tamoliūnė[2], Ksenija Frelih[3], Indrė Oleškevičienė[4], Elena Trepulė[5]

[1] Vytautas Magnus university, Lithuania, airina.volungeviciene@vdu.lt
[2] Vytautas Magnus university, Lithuania, giedre.tamoliune@vdu.lt
[3] Knowledge Innovation Centre, Malta, ksenija@knowledgeinnovation.eu
[4] Vytautas Magnus university, Lithuania, indre.oleskeviciene@vdu.lt
[5] EDEN Digital Learning Europe, Estonia, elena.trepule@vdu.lt

Correspondence: Indrė Oleškevičienė: indre.oleskeviciene@vdu.lt

Abstract:

WINDEE - Well-being in Digital Education Ecosystem is a European Commission funded policy experimentation project which focuses on enhancing digital well-being in European education by equipping students and educators with tools, training, and environments that support healthy, focused, and engaging use of digital technologies. WINDEE project aims to build capacity among educators through continuous professional development, hands-on training, and the establishment of a strong peer-support community. WINDEE aims to empower teachers to effectively integrate digital tools into their practice in ways that enhance learning outcomes while safeguarding students' mental health, focus, and overall well-being. The Digital Well-being Framework provides principles for responsible technology use and strategies for creating balanced digital learning environments. It includes practical recommendations for selecting technological solutions well-suited for learning design.

Keywords: Digital Well-being, Education Innovation, Digital Transformation

Summary

In today's rapidly evolving digital landscape, ensuring learners of all ages are well-prepared to thrive in the broader digital sphere and particularly their education is crucial. However, several challenges hinder this goal:

- many schools lack the necessary technical infrastructure, leading to unequal access;
- teachers need better training to integrate technology effectively;
- technology can cause distractions and information overload;
- protecting student data and privacy is critical but challenging;
- and excessive use of digital services can result in compulsive behaviours, mental health issues, and reduced social interaction.

WINDEE project aims to address these issues to foster an environment where students can achieve digital well-being and maximise the benefits of technology in educational settings. WINDEE envisions a future where digital education empowers learning while safeguarding mental, emotional, and physical well-being – integrated into policy and practice, through collaboration, innovation, and evidence-based strategies across Europe.

The project begins with comprehensive evidence building through research, assessment, and policy mapping on digital well-being. The research results lead to shaping high quality digital education practices and establishing the digital well-being framework which demonstrates that digital well-being as a state is possible when digital load and digital resources are in balance. Finally, WINDEE develops teacher training resources and policy recommendations that empower educators to maintain digital well-being in the classroom for teachers and students.

Ultimately, WINDEE aims to reshape the digital education ecosystem so that technology empowers learning without compromising the mental, emotional, or physical health of its users.

Project objectives include:

- **Improve digital skills and competences among teachers and students to** support effective learning and teaching.
- **Develop and refine digital learning environments** to ensure they support students' physical, cognitive, emotional, and psychological well-being.
- **Integrate digital competences into curriculum design** to foster a cohesive and inclusive educational experience.
- **Engage educators, policymakers, and communities** to collaboratively promote digital well-being in education.
- **Use research, data, and policy experimentation** to inform policy development and implementation strategies that enhance digital education practices.
- **Contribute to the strategic goals** of the European Education Area, the European Higher Education Area, and the Digital Education Action Plan.

Project outcomes suggest: Digital Well-being Framework, Evidence Base for Policy, Educator Training and Resources, Stakeholder Community, Policy Experimentation, Policy Recommendations, Dissemination and Visibility, Sustainability and Long-Term Impact already achieved and still to be achieved, are posted on the project website https://windee.eu/.

Project coordinator – Vytautas Magnus University, Lithuania

Project partners: Knowledge Innovation Centre (Malta), Tallinn University (Estonia), Open University of Catalonia (Spain), EDEN Digital Learning Europe (Estonia), European Schoolnet (Belgium), Educraftor (Finland), National Agency for Education in Lithuania (Lithuania).

Project associate partners: Lithuanian Educational Center for the Deaf and Hard of Hearing (Lithuania), Stifterverband (Germany), LieDM association (Lithuania).

The WINDEE project will have a transformative impact on how digital education is approached across Europe by embedding digital well-being as a core component of educational policy and practice. Through research, experimentation, and stakeholder collaboration.

Disclaimer

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

References

Project website https://windee.eu/about-windee/

Vytautas Magnus University Institute for Study Innovations website https://studyonline.lt/

The educational affordances of Hybrid-Intelligence: Who will be the judge?

Jan Petrus Bosman[1], Wim Van Petegem[2], Tinne De Laet[3], Nompilo Tshuma[4]

[1] Faculty of Engineering Technology, KU Leuven, Belgium; janpetrus.bosman@kuleuven.be
[2] Faculty of Engineering Technology, KU Leuven, Belgium; wim.vanpetegem@kuleuven.be
[3] Faculty of Engineering Science, KU Leuven, Belgium; tinne.delaet@kuleuven.be
[4] Faculty of Education, Stellenbosch University, South Africa; ntshuma@sun.ac.za

Correspondence: Jan Petrus Bosman: janpetrus.bosman@kuleuven.be

Abstract:

This inquiry explores sociomaterial affordances of human-Generative AI collaboration in higher education. Moving beyond traditional edtech understandings, an intra-active approach frames affordances as emergent through agential cutting. Legitimation Code Theory's Specialization dimension provides empirical grounding, identifying four hybrid-intelligence Academic Advising positions, enabling analysis, design and debate of human-GAI educational practice.

Keywords: Hybrid-intelligence, Socio-material affordances, Legitimation Code Theory, Specialization, Academic Advising

Summary

There is a growing intention for meaningful human-Generative AI (GAI) collaboration in the higher educational space. The concept of technology affordances creates pathways for the understanding and activation of this new kind of hybrid-intelligence (Molenaar, 2022) educational work. This inquiry moves from a traditional edtech understanding of affordances (Chemero, 2018; Conole & Dyke, 2004) to an arguably more potent sociomaterial underpinning for describing and enacting a GAI infused educational practice (Pentzold & Bischof, 2019). A quick-trace overview of the recent developments in educational technology affordance-research (Wegerif & Major, 2024) shows a new focus on this socio-technical approach when it comes to the strange new world of hybrid-intelligent collaboration between a human educationalist and a GAI system.

An intra-active sociomaterial approach posits that the affordance of a human-GAI collaboration is only to be elicited or measured in the unique moments of "agential cutting." It also implies that GenAI systems do not hold any affordance (in the traditional edtech sense) in its own right apart from its sociomaterial coupling with a human collaborator. This creates potential questions about the relativity of any educational GAI-infused practice and its empirical description. Does everything go? Who will judge the output?

Legitimation Code Theory (LCT), a relational theoretical toolkit, provides an avenue of potential judging and empirical description through its Specialization dimension (Maton, 2014). We analysed data from interviews, focus groups and open-ended online questionnaire-responses of Academic Advisors from a Flemish university through a Specialization lens and show how a possibly infinite number of infinitely changeable hybrid-intelligence educational positions can be visualised on a relational plane. Four main Epistemic- and Social Relationally entangled Academic Advising

positions (Professional, Relational, Teaching and Pop-Culture) are identified. Through this approach, a new kind of sociomaterial hybrid-intelligence affordance can be visualised and utilised for analysis, design and debate when it comes to how to judge the outcomes of such a human-machine collaboration.

References

Chemero, A. (2018). An outline of a theory of affordances. How Shall Affordances Be Refined?: Four Perspectives: A Special Issue of Ecological Psychology, 7413(2003), 181–195. https://doi.org/10.4324/9780203726655-5

Conole, G., & Dyke, M. (2004). What are the affordances of information and communication technologies? Alt-J, 12(2), 113–124. https://doi.org/10.1080/0968776042000216183

Maton, K. (2014). Knowledge and Knowers: Towards a realist sociology of education. Routledge.

Molenaar, I. (2022). Towards hybrid human-AI learning technologies. European Journal of Education, 57(4), 632–645. https://doi.org/10.1111/ejed.12527

Pentzold, C., & Bischof, A. (2019). Making Affordances Real: Socio-Material Prefiguration, Performed Agency, and Coordinated Activities in Human–Robot Communication. Social Media and Society, 5(3). https://doi.org/10.1177/2056305119865472

Wegerif, R., & Major, L. (2024). The theory of educational technology: Towards a dialogic foundation for design. Routledge.

Artificial Intelligence for Mentoring Dyads in Apprenticeship: Developing the Pedagogical Competencies of Company Craftsmen

Rita Mičiulienė[1], Nijolė Čiučiulkienė[2], Edita Balzarienė[3], Rasa Didžiulienė[4]

[1] Vytautas Magnus University, Lithuania; rita.miciuliene@vdu.lt
[2]Vytautas Magnus University, Lithuania; nijole.ciuciulkiene@vdu.lt
[3]Arts and Design Training Center, Lithuania; edita.balzariene@mendiz.lt
[4]Vytautas Magnus University, Lithuania; rasa.didziuliene@vdu.lt

Correspondence: Rita Miciuliene: rita.miciuliene@vdu.lt

Abstract:

The increasing importance of apprenticeship-based learning in vocational education has highlighted the crucial role of company craftsmen in supporting apprentices' professional development. Acting as workplace mentors, company craftsmen guide apprentices in acquiring practical skills, professional responsibility, and work-related values within authentic work environments (Billett, 2011; Ceelen, Khaled, Nieuwenhuis & de Bruijn, 2023; Smith, Taylor-Smith, Bratton & Dutton, 2025). Work-based learning enables the integration of theoretical knowledge with practical experience and contributes to the development of occupational competences (Billett, 2011). However, research indicates that many company craftsmen lack the pedagogical and mentoring competences required for the effective organisation of learning processes in the workplace (Goller & Paloniemi, 2017; Nägele & Stalder, 2020; Tūtlys, Gedvilienė & Didžiulienė, 2021; Čiučiulkienė, Tandzegolskienė & Stupelienė, 2022). Strengthening the pedagogical competences of company craftsmen, therefore, remains a key challenge for improving the quality of apprenticeship-based learning. In contemporary vocational education, digital technologies and artificial intelligence (AI) are increasingly recognised as tools that can support teaching and learning processes. Research suggests that AI can facilitate personalised learning, learning analytics, and pedagogical decision-making in educational contexts (Holmes, Bialik, & Fadel, 2023). Generative artificial intelligence tools such as ChatGPT and Microsoft Copilot can assist in designing learning tasks, generating reflection questions, providing structured feedback, and supporting the planning of workplace learning activities. The integration of AI tools into mentoring processes creates opportunities to transform teaching practices and support the development of company craftsmen's pedagogical competences, particularly in instructional planning, reflection facilitation, and feedback provision (Holmes et al, 2023). At the same time, researchers emphasise the need to critically evaluate the impact of digital technologies and ensure their responsible and ethical integration into education systems (Miao & Holmes, 2023).

Methodology. A qualitative research design was employed to explore the development of pedagogical competences of company craftsmen in apprenticeship-based learning and the role of vocational teachers in the mentoring process. Qualitative research enables an in-depth understanding of participants' experiences and perspectives in workplace learning contexts (Creswell & Poth, 2018). Data was collected through semi-structured interviews focusing on mentoring practices, the development of pedagogical competences of company craftsmen, collaboration between vocational teachers and company craftsmen, and the organisation of apprenticeship-based learning. The study involved 17 participants, including 8 company craftsmen and 9 vocational teachers, selected through purposive sampling due to their direct involvement in apprenticeship-based training. Participants represented several vocational fields, such as construction, automotive mechanics, logistics, decorative landscaping and social care. The research was conducted in three vocational education institutions in Lithuania. Data was collected between March and April 2025 through both face-to-face and online interviews. The interviews were recorded with participants' consent and transcribed. The data were analysed using inductive thematic analysis

following Braun and Clarke (2006), enabling the identification of key themes related to mentoring practices, collaboration and the development of pedagogical competences in apprenticeship-based learning.

Research problem question: How can AI tools support the development of pedagogical competences of company craftsmen in apprenticeship-based mentoring?

The purpose of this study is to analyse the role of AI tools in developing the pedagogical competencies of company craftsmen in apprenticeship-based mentoring.

The results of the study indicate that the quality of apprenticeship-based learning is closely related to the pedagogical competences of company craftsmen. Both literature analysis and empirical findings reveal that insufficient attention is still paid to the pedagogical preparation of company craftsmen in Lithuania, although these competences are essential for effective mentoring. The results also show that pedagogical competences are mainly developed through practical mentoring experience, collaboration with vocational teachers and reflective practice. Furthermore, the results suggest that artificial intelligence tools could support mentoring by assisting in learning task preparation, providing feedback on learners' progress, and offering pedagogical guidance for company craftsmen.

Keywords: apprenticeship-based learning; company craftsmen; pedagogical competences; artificial intelligence in education.

References

Billett, S. (2011). *Vocational education: Purposes, traditions and prospects*. Springer.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Ceelen, L., Khaled, A., Nieuwenhuis, L., & De Bruijn, E. (2023). Pedagogic practices in the context of students' workplace learning: A literature review. *Journal of Vocational Education & Training*, *75*(4), 810–842. https://doi.org/10.1080/13636820.2021.1973544

Ciuciulkiene, N., Tandzegolskiene, I., & Stupelienė, G. I. (2022). The challenges of apprenticeship: The status quo of professional masters' pedagogical competencies. *SOCIETY. INTEGRATION. EDUCATION. Proceedings of the International Scientific Conference*, *1*, 732–743. https://doi.org/10.17770/sie2022vol1.6886

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches* (Fourth edition, international student edition). SAGE.

Goller, M., & Paloniemi, S. (Sud.). (2017). *Agency at work* (T. 20). Springer International Publishing. https://doi.org/10.1007/978-3-319-60943-0

Holmes, W., Bialik, M., & Fadel, C. (2023). *Artificial intelligence in education: Promise and implications for teaching and learning* (Updated ed.). Center for Curriculum Redesign. https://doi.org/10.5281/zenodo.7036568

Miao, F., & Holmes, W. (2023). *Guidance for generative AI in education and research*. UNESCO. https://doi.org/10.54675/EWZM9535

Nägele, C., & Stalder, B. E. (2020). Competence development of company trainers in apprenticeship training. *Empirical Research in Vocational Education and Training, 12,* 10. https://doi.org/10.1186/s40461-020-00097-7

Smith, S., Taylor-Smith, E., Bratton, A., & Dutton, M. (2025). Understanding work and study demands of degree apprentices using conservation of resources theory. *Empirical Research in Vocational Education and Training*, *17*(1), 14. https://doi.org/10.1186/s40461-025-00189-1

Tūtlys, V., Gedvilienė, G., & Didžiulienė, R. (2021). The influence of teacher professional burnout on professional satisfaction in professional career development. *The New Educational Review*, *63*(1), 226–236. https://doi.org/10.15804/tner.21.63.1.18

Feel the Code: How Vibe-Coding and TMI Spark Creative Learning

Runar Eikhaug[1]

[1]NLA University College, Norway; runar.eikhaug@nla.no

Correspondence: Runar Eikhaug: runar.eikhaug@nla.no

Abstract:

This poster presents a qualitative pilot study examining vibe coding—an AI-assisted, prompt-driven approach to programming—as an emerging pedagogical model for cultivating 21st-century competencies, with particular emphasis on the Four Cs: critical thinking, creativity, collaboration, and communication. The study is grounded in the TMI model (Think–Make–Improve) developed by Martinez and Stager (2013) and framed within a sociocultural perspective inspired by Vygotsky and Bruner, viewing learning as a socially mediated process supported through tools, dialogue, and scaffolded meaning-making.

Vibe coding is conceptualised as a cyclic process in which students engage in (1) problem formulation, (2) AI-supported idea generation, (3) testing and evaluation, and (4) iterative improvement—positioning failure as a natural and productive dimension of learning. Within this cycle, AI functions both as a thinking partner and as a mediational tool that expands students' zones of proximal development.

The pilot study is initially carried out with pre-service teachers, providing insight into how AI-supported iterative practices can strengthen future teachers' pedagogical toolkits and expand their methodological repertoires. A multimodal data-collection strategy is employed, including structured observation logs, student exit reflections, short group interviews, and artefact analysis of student-produced digital projects and AI chat histories. Three interrelated layers of scaffolding are examined: AI as scaffold for the individual learner, peers as scaffolds for another, and the teacher as scaffold for the group—reflecting Bruner's notion of contingent adaptive support.

By integrating sociocultural theory with emerging AI-supported pedagogical practice, this pilot study contributes to ongoing discussions about how innovative technologies can cultivate future-ready competencies—and what it means to be competent within an AI-assisted creative process. The study is ongoing. Preliminary findings and reflections from the classroom implementation will be presented and discussed during the poster session.

Marketing Artificial Intelligence Assistant (MAIA)

Rodger Faherty[1]

[1] Technological University Dublin, School of Business Technology, Retail & Supply Chain, Ireland

Correspondence: Rodger Faherty: Rodger.faherty@tudublin.ie

Abstract:

The Marketing AI Assistant (MAIA) project builds on a previous project completed in June 2024. That project created a simple chatbot to help third-year Marketing students find information about sustainability, university sustainability policies, government/council/commercial sustainability policies and the UN Sustainable Development Goals (SDGs). It showed that students liked getting quick answers and found it easier to understand the university's sustainability work.

Keywords: AI Assistant, Agent, Chatbot

Summary

The Marketing AI Assistant (MAIA) is a TU Dublin project that grew out of a SATLE-funded Sustainability Chatbot completed in June 2024. The original chatbot was created for third-year Marketing students and focused on helping them find relevant sustainability material quickly — drawing on TU Dublin sources, public policy information, and the UN Sustainable Development Goals. Building on that early work, MAIA expands the scope so that students across all four years of TU Dublin Marketing programmes (TU783, TU923, TU932, TU934) can use a single, consistent point of access for common questions and signposting.

The emphasis is practical: students often need clear answers on modules, assessments, key dates, support, and where sustainability sits within programme and university activity. MAIA is being developed to respond using curated, approved information rather than open-ended content generation, reflecting the broader higher-education literature that chatbot usefulness depends heavily on the quality and maintenance of institutional knowledge. (Chan & Hu, 2023; McGrath et al., 2024)

MAIA is intended to be usable without requiring students to log in or share personal data, and the project explicitly foregrounds oversight, accuracy, and responsible use—issues that repeatedly appear in research on generative AI adoption in higher education, including concerns around privacy, reliability, and appropriate boundaries for support tools. (Chan & Hu, 2023; McGrath et al., 2024)

Evaluation is designed to be iterative: after initial deployment is followed by student feedback and usage analytics to identify recurring information gaps, improve how programme information is presented, and reduce avoidable repeat queries to staff. In doing so, MAIA aims to strengthen the student experience while also improving the consistency and reach of programme communications. (Pereira et al., 2023)

References

Chan, C. K. Y., & Hu, W. (2023*). Students' voices on generative AI: Perceptions, benefits, and challenges in higher education*. International Journal of Educational Technology in Higher Education, 20, Article 43. https://doi.org/10.1186/s41239-023-00411-8

McGrath, C., Farazouli, A., & Cerratto-Pargman, T. (2024). *Generative AI chatbots in higher education: A review of an emerging research area*. Higher Education. https://doi.org/10.1007/s10734-024-01288-w

Pereira, D. S. M., Falcão, F., Costa, L., Lunn, B. S., Pêgo, J. M., & Costa, P. (2023). *Here's to the future: Conversational agents in higher education—A scoping review*. International Journal of Educational Research, 122, 102233. https://doi.org/10.1016/j.ijer.2023.102233

Multimedia Learning Environment: User-Oriented AI Integration

Christine Siemer[1], Vivian Harberts[2]

[1] Institute Technology and Education (ITB), University of Bremen, Germany: chsiemer@uni-bremen.de
[2] Institute Technology and Education (ITB), University of Bremen, Germany: harberts@uni-bremen.de

Correspondence: Christine Siemer: chsiemer@uni-bremen.de

Abstract:

This contribution presents the design and development process of a cross-country multimedia learning environment within the framework of the Erasmus+ project "Multimedia Learning Environment for Work-Based Learning Tasks for VET Students in the sector of applied informatics" (MULE). The poster addresses the country-specific discrepancies between the qualifications offered and those in demand and the cooperation in the field of digital education in order to identify opportunities for the education and training community across national borders (Vuorikari et al., 2022). Our research questions (RQ) are:

RQ-1: Which design features of the MULE multimedia learning environment positively influence learners' subjective learning success?

RQ-2: To what extent can AI elements be integrated into MULE's multimedia learning environments from a user perspective?

Keywords: Design-Based Research (DBR), Multimedia Learning Environment, Artificial Intelligence, Vocational Education and Training, VET, Applied Informatic Sector

Summary

The contribution is based on the concept of Spheres of Activity (SoA) (Howe & Knutzen, 2022). SoA bundles typical work processes of a profession and enables a European comparison of requirements. Learning and work tasks are based on complete professional activities – from order acceptance to planning, execution, and completion – and aim to promote technical, methodological, social, and personal skills (Howe & Knutzen, 2022). Learning psychology design elements are considered when designing the learning environment (Niegemann & Niegemann, 2018). The study follows a design-based research (DBR) approach (Reinmann, 2017). After initial piloting of the developed tasks, the approach will be expanded to include an additional qualitative survey. Problem-centered interviews with students and teachers are planned to systematically record assessments of AI-supported tools as well as subjective learning success and usage practices. The evaluation is based on qualitative content analysis according to Kuckartz (2018). Through its two-stage approach in line with the DBR framework, the paper generates particular insight. First, a theory- and practice-based multimedia learning environment is iteratively developed and tested. Second, AI-supported elements are identified based on qualitative feedback from students and teachers and are didactically reflected. This process demonstrates a user-oriented integration of AI that considers pedagogical requirements and developments in professional practice, supporting the sustainable implementation of innovative learning technologies in vocational education.

References

Howe, F., & Knutzen, S. (2022). *Berufliche Handlungsfelder beschreiben* (Handbücher für die Berufsbildungspraxis). https://doi.org/10.26092/elib/830

Kuckartz, U. (2018). Qualitative Inhaltsanalyse. Methoden, Praxis, Computerunterstützung. 4. Auflage. Beltz Juventa.

Niegemann, H. M., & Niegemann, L. (2018). IzELA: Ein Instructional-Design-basiertes Evaluationstool für Lern-Apps. In S. Ladel, J. Knopf & A. Weinberger (Hrsg.), *Digitalisierung und Bildung* (S. 159–175). Springer. https://doi.org/10.1007/978-3-658-18333-2

Reinmann, G. (2017). Design-based Research. In D. Schemme & H. Novak (Hrsg.), Gestaltungsorientierte Forschung – Basis für soziale Innovationen. Erprobte Ansätze im Zusammenwirken von Wissenschaft und Praxis, 49–61. Bertelsmann.

Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2: The Digital Competence Framework for Citizens* (EUR 31006 EN). Publications Office of the European Union. https://doi.org/10.2760/115376

AI-based Design: Follow-Up Qualification of CVET-Mentors

Christine Siemer[1], Frieda Klaus[2]

[1] Institute Technology and Education (ITB), University of Bremen, Germany: chsiemer@uni-bremen.de
[2] Institute Technology and Education (ITB), University of Bremen, Germany: fklaus@uni-bremen.de

Correspondence: Christine Siemer: chsiemer@uni-bremen.de

Abstract:

The contribution presents the research design of a scalable generative-AI (genAI) supported consulting and learning platform for the follow-up qualification of continuing education mentors using the example of the logistics sector. The design and development work for the platform is being carried out as part of the project 'Innovative Design Approaches in Logistics for Promoting the Competence of Continuing Education Mentors – (GEKKO)' funded by the Federal Ministry for Education, Family Affairs, Senior Citizens, Women and Youth (BMBFSFJ) and supported in scientific and administrative matters by the Federal Institute for Vocational Education and Training (BIBB).

Our research questions (RQ) are:

> *RQ1: What barriers to continuing education and specific counselling needs do potential continuing education mentors in logistics perceive?*
>
> *RQ2: How do continuing education mentors feel about a genAI-supported counselling and learning platform?*
>
> *RQ3: To what extent does the genAI-supported counselling and learning platform contribute to qualification follow-up offer?*

Keywords: CVET-Mentors, Generative-AI, Follow-Up Qualification, Logistic Sector

Summary

The background is a measure initiated by the German National Education Strategy (NWS) to promote continuing vocational training in companies by establishing continuing education mentors (WBM), which represent a new approach to increasing participation in continuing education. It is emphasised that previous counselling concepts have not been as successful as desired and that there is a need for support measures for the follow-up qualification of WBM (BIBB, 2025). The sampling includes, in particular, company training staff in the role of mentors. Mentoring focuses on marginal part-time workers (mentees) (Cedefop, 2019). The research design is based on a mixed-methods approach and comprises four analysis phases:

(1) Status analysis using expert interviews to assess the current maturity level of mentoring structures (Winkler & Calmez, 2025).
(2) Needs analysis to gain insights into barriers to continuing education and counselling needs (Gieseke & Stimm, 2016).

(3) Technology acceptance analysis to assess the attitudes of WBMs towards innovative continuing education formats (Venkatesh et al., 2003; Scheuer, 2020).
(4) Effectiveness analysis based on the model by Sandmeier, Hanke & Gubler (2018) in order to identify transfer-relevant indicators.

The contribution outlines international scientific discussion on AI-supported follow-up qualifications, and the cross-country applicability of CVET-Mentors approach will be highlighted.

References

BIBB (2025). *Qualifizierung und Etablierung von betrieblichen Weiterbildungsmentorinnen und -mentoren (WBM)*. https://www.bibb.de/de/185947.php

Cedefop. (2019). *Geringqualifizierung eindämmen durch lebenslanges Lernen* (Kurzbericht, März 2019). Europäisches Zentrum für die Förderung der Berufsbildung. https://www.cedefop.europa.eu/de/publications-and-resources/publications/9136

Gieseke, W. & Stimm, M. (2016). *Praktiken der professionellen Bildungsberatung. Innensichten auf Entscheidungsfindung im Beratungsprozess*. Springer. DOI 10.1007/978-3-658-10878-6

Sandmeier, A., Hanke, U. & Gubler, M. (2018). Die Bedeutung der Gestaltung des Lernfelds und des Funktionsfelds für den subjektiven Erfolg betrieblicher Weiterbildung. *ZfW*, *41*, 41–55. https://doi.org/10.1007/s40955-018-0105-9

Scheuer, D. (2020). *Akzeptanz von Künstlicher Intelligenz. Grundlagen intelligenter KI-Assistenten und deren vertrauensvolle Nutzung*. Springer Vieweg. https://doi.org/10.1007/978-3-658-29526-4

Winkler, M & Calmez, A. (2025). *Weiterbildungsmentorinnen und -mentoren: Tätigkeiten und Kompetenzanforderungen. Ein Arbeitsrahmen für die Qualifizierung von Weiterbildungsmentorinnen und -mentoren*. Bundesinstitut für Berufsbildung. https://www.bibb.de/de/200388.php

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, *27*(3), 425 478. https://doi.org/10.2307/30036540

A participatory process to support whole-school digital transformation

Ane Zubizarreta Pagaldai[1], Amaia Arroyo Sagasta[1]

[1] Faculty of Humanities and Education Sciences, Mondragon Unibertsitatea, Spain

Correspondence: Ane Zubizarreta Pagaldai; azubizarreta@mondragon.edu; Amaia Arroyo Sagasta aarroyo@mondragon.edu

Abstract:
Contemporary society is increasingly shaped by digital technologies, a transformation accelerated by the rapid emergence of Artificial Intelligence (AI), which is redefining professional demands and knowledge practices (Çela et al., 2024). Education must respond through processes of digital transformation understood as systemic and organisational change involving pedagogy, culture, leadership and strategy (Pettersson, 2021). Although digitalisation has become a strategic priority in Europe (European Commission, 2020), research shows that the availability of technology alone does not guarantee meaningful change without shared vision, pedagogical reflection and coherent school-level strategies (Zubizarreta Pagaldai et al., 2025). Strengthening schools' digital capacity through whole-school approaches is therefore essential, especially in contexts where the presence of AI increases the complexity of educational decision-making (Kampylis & Sala, 2023).

This poster presents an ongoing design-based support process aimed at fostering a systematic and context-sensitive digital transformation in a Basque school. The model is informed by prior research indicating that sustainable digital transformation requires shared institutional positioning, collective reflection and coherent strategies adapted to each context (Zubizarreta Pagaldai et al., 2025). Based on these findings, a structured accompaniment process was designed to guide the school from diagnosis to the definition of its digital strategy.

The intervention is organised in four phases: (1) contextual diagnosis using SELFIE results, institutional documents and analysis of digital practices; (2) definition of a shared positioning towards digitalisation; (3) goal setting focused on students' digital competence and meaningful technopedagogical integration of technology, including reflection on AI; and (4) co-design of the school's Digital Plan, identifying priorities and actions.

The process follows a participatory and iterative approach involving leadership and teachers. The main contribution is a structured support model that helps schools move from diagnosis to a coherent digital strategy, supporting whole-school digital transformation in contexts shaped by emerging technologies such as AI.

Keywords: Digital transformation, SELFIE, digital competence, school digital strategy

References

Çela, E., Vajjhala, N. R., Eappen, P., & Vedishchev, A. (2024). Artificial Intelligence in Vocational Education and Training: In E. Çela, N. R. Vajjhala, R. M. Potluri, & P. Eappen (Eds.), Advances in Educational Technologies and Instructional Design (pp. 1–16). IGI Global. https://doi.org/10.4018/979-8-3693-8252-3.ch001

European Commission. (2020). Digital Education Action Plan (COM(2020) 624 Final)

Kampylis, P., & Sala, A. (2023). Improving the digital capacity of schools by using the SELFIE tool for collective reflection. European Journal of Education, 58(2), 331–346. https://doi.org/10.1111/ejed.12561

Pettersson, F. (2021). Understanding digitalization and educational change in school by means of activity theory and the levels of learning concept. Education and Information Technologies, 26(1), 187–204. https://doi.org/10.1007/s10639-020-10239-8

Zubizarreta Pagaldai, A., Marín, V. I., & Imaz Agirre, A. (2025). Mixed-methods analysis of SELFIE in basic vocational education and training: A triple case study. EDUTEC – Revista Electrónica de Tecnología Educativa, 94, 292–312. https://doi.org/10.21556/edutec.2025.94.4117

WePlay: A European Gamification Platform for Inclusive and Engaging Education

Genutė Gedvilienė[1], Monika Dievaitytė-Baikštienė[2]

[1] Education Academy, Vytautas Magnus University, Lithuania; genute.gedviliene@vdu.lt
[2] Education Academy, Vytautas Magnus University, Lithuania; monika.dievaityte-baikstiene@vdu.lt

Correspondence: Genutė Gedvilienė: genute.gedviliene@vdu.lt

The rapid integration of digital technologies in education has encouraged educators to explore innovative pedagogical approaches that promote student engagement, collaboration, and social and emotional learning. Among these approaches, gamification has emerged as an effective strategy for transforming traditional classroom activities into interactive learning experiences by leveraging learners' intrinsic motivations such as competition, achievement, and recognition. Gamification, or gameful design, refers to the strategic application of game design principles, mechanics, and elements into non-game environments, like classrooms (Christopoulos & Mystakidis, 2023).

Despite technological progress, many schools across Europe, particularly those located in rural or geographically isolated areas, continue to experience limited opportunities for international collaboration and unequal access to innovative digital learning resources. There is a well-known technological disparity between schools in rural and urban areas (Mustafa, 2024). These challenges underline the need for accessible digital solutions that not only support the integration of information and communication technologies (ICT) in education but also foster meaningful connections between schools and learning communities. In this age of technology, gamification themes attract activities from a wide variety of perspectives and therefore unite many different fields (Hamari, Xi, & Legaki, 2023).

This paper presents the Erasmus+ project WEPLAY – Educational Gamification Platform nr. 2025-1-ES01-KA220-SCH-000351661, an international initiative aimed at developing a collaborative digital environment that enables teachers to design, implement, and share gamified learning activities. The project is implemented through a partnership of 5 different educational institutions and organisations: Estela Cántabra and University Deusto from Spain, Istituto Comprensivo di Bobbio (Italy), Roscommon Leader Partnership (Ireland), and Vytautas Magnus University (Lithuania). The platform is designed to support primary school teachers in integrating gamification into classroom practice while facilitating cross-school collaboration among students from different European countries.

A distinctive aspect of the WEPLAY platform is the integration of digital gameplay with real-world learning activities. The integration of gamified virtual reality helps meet the new educational demands, enrich the educational process, improve learning achievements, and assist toward the materialization of the digital transformation of education (Lampropoulos, 2024).
Key platform features include:

- Teacher dashboard for designing activities, assigning tasks, monitoring progress, and managing classroom participation;

- Student interface where learners engage in missions, submit evidence (e.g., photos, text, multimedia), and track their achievements;
- Gamification mechanics, such as points, badges, levels, and narrative storytelling;
- Learning analytics tools that provide teachers with insights into student participation, progress, and collaboration patterns;
- Role-based participation, allowing students to take on different roles within team-based challenges (e.g., leader, researcher, reporter), supporting collaborative learning and responsibility sharing.

Within this framework, learning tasks extend beyond the virtual environment and involve actions such as environmental exploration, local community engagement, and collaborative problem-solving connected to students' immediate surroundings. This hybrid learning approach combines digital interaction with experiential activities, aiming to enhance learner engagement and strengthen the connection between educational content and everyday contexts.

In summary, it can be said that future research will focus on the assessment of learning outcomes, the analysis of user engagement data, and the evaluation of applicability in various educational settings. Meanwhile, the WEPLAY project contributes to the development of innovative digital learning practices that support more connected and participatory educational ecosystems across Europe.

Keywords: Gamification in education, Technology-enhanced learning (TEL), Collaborative learning environments, Learning platform, Digital transformation in education.

References

Christopoulos, A., & Mystakidis, S. (2023). Gamification in education. Encyclopedia, 3(4), Article 89. https://doi.org/10.3390/encyclopedia3040089

Hamari, J., Xi, N., & Legaki, Z. (2023). Gamification. In Proceedings of the Annual Hawaii International Conference on System Sciences. https://hdl.handle.net/10125/102765

Mustafa, F., Nguyen, H. T. M., & Gao, X. (2024). The challenges and solutions of technology integration in rural schools: A systematic literature review. International Journal of Educational Research, Article 102380. https://doi.org/10.1016/j.ijer.2024.102380

Lampropoulos, G. (2024). Virtual reality and gamification in education: A systematic review. Educational Technology Research and Development. Advance online publication. https://doi.org/10.1007/s11423-024-10351-3

Designing a Student-Centered Fashion Platform: A Collaboration in AI-Integration

Jasmin Kwon[1]

[1]Middle Tennessee State University, US; jasmin.kwon@mtsu.edu

Correspondence: Jasmin Kwon: jasmin.kwon@mtsu.edu

Abstract:

This project documents the collaborative development of a student-focused fashion forecasting and resource platform, created through a semester-long partnership between Fashion Studies and senior-level Software Engineering students. Recognizing that commercial forecasting services are financially inaccessible to many students, this initiative provides a free, web-based educational alternative. Conceived as a "Creative Command Center," the platform mirrors the professional research process, guiding users from initial inspiration to fully developed visual concepts.

The website integrates a searchable digital library of historical fashion data with an interactive creative workspace. To streamline asset management, the platform features AI-driven image tagging and resource search, automatically categorizing user-uploaded content by silhouette, color, and material. Inspired by the metadata systems of the *Vogue Archive*, the system includes advanced filtering and a "Trend Curve" time-series histogram to track style frequency over time. High-speed media galleries and a digital mood board canvas allow for rapid visualization and collaborative feedback. Weekly cross-disciplinary meetings guided the iterative development of this functional prototype, culminating in a critical reflection on the intersection of artificial intelligence, technical implementation, and educational impact in fashion pedagogy.

Keywords: Fashion Forecasting, Trend Analysis, AI, User centered design, Fashion pedagogy

Innovating Healthcare Education: A Modular MOOC Approach to Enhancing Soft Skills with Micro-Credentials

Estela Daukšienė[1], Indrė Oleškevičienė[2], Otčenášková Tereza[3], Marek Zanker[4], Martina Husáková[5], Ilja Tachecí[6], José Blas Pagador Carrasco[7], Luisa Fernanda Sánchez Peralta[8], Jānis Pekša[9], Nina Pereza[10]

[1, 2] Education Academy, Vytautas Magnus University, Lithuania; estela.dauksiene@vdu.lt
[3, 4, 5] Faculty of Informatics and Management, University of Hradec Kralove, Czech Republic; tereza.otcenaskova@uhk.cz
[6] Faculty of Medicine in Hradec Králové, Charles University, Czech Republic; tachecii@lfhk.cuni.cz
[7, 8] Jesus Usón Minimally Invasive Surgery Centre (CCMIJU), Spain; jbpagador@ccmijesususon.com; lfsanchez@ccmijesususon.com
[9] Faculty of Informatics, Turiba University, Latvia; janis.peksa@turiba.lv
[10] Faculty of Medicine, University of Rijeka, Croatia; nina.pereza@medri.uniri.hr

Correspondence: Estela Dauksiene: estela.dauksiene@vdu.lt

Abstract:

While essential for patient care and effective teamwork, soft skills remain undervalued in traditional healthcare education. The Erasmus+ project MISS4Health bridges this gap through an innovative digital learning solution: a modular Massive Open Online Course (MOOC) leading to micro-credentials. This initiative offers structured, personalised training to empower healthcare professionals with the transversal competencies they need.

Keywords: soft skills, healthcare, MOOC, micro-credentials

Summary

The main objective of the Erasmus+ KA2 project MISS4Health: Micro-credentials in Soft Skills for Healthcare Professionals and Students (2023-1-CZ01-KA220-HED-000159335) is to improve transversal competencies of healthcare professionals, focusing on the development of their soft skills. Thus, project medical partners (medical university teachers and practitioners) collaborate with technology and education specialists and create interactive, modular Massive Open Online Course (MOOC) leading to micro-credentials. The modular MOOC development includes curricular design, interactive content creation, micro-credentials' design and initial MOOC piloting with healthcare specialists and medical students. The double-loop validation ensures the overall quality of the MOOC. Engaging simulations and practice tests with embedded real-life examples help develop their soft skills.

A MOOC comprises 5 modules, which are interrelated but may also be piloted as stand-alone, self-directed online courses. Each module focuses on the development of a single skill, together representing key soft skills necessary in daily clinical practice. The five single-skill modules include: communication, decision-making, leadership, situational awareness, and teamwork. The integration of contemporary digital tools, such as multimedia materials and simulation-based serious games, facilitates active learner participation and the practical application of skills. Furthermore, embedded self-assessment instruments and structured feedback mechanisms support individualised learning pathways, enabling targeted development of selected skills. The embedded micro-credentials support further skill recognition, as they are structured in line with the EU Council Recommendations (2022) on the mandatory elements, descriptors, and principles for micro-credential design and implementation (EU Council, 2022).

Disclaimer: The project is funded by the European Union. The created project results, views and opinions expressed are, however, those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union can be held responsible for them.

References

EU Council. (2022). COUNCIL RECOMMENDATION of 16 June 2022 on a European approach to micro-credentials for lifelong learning and employability (2022/C 243/02; Official Journal of the European Union, pp. 10–22). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022H0627(02).

MISS4HEALTH (2025). Project website. https://miss4health.eu

Bridging Institutions through Open Course Data: QualityLink's Platform and Quality Indicators for Micro-Credentials

Estela Daukšienė[1], Elena Trepulė[2], Jochen Ehrenreich[3], Colin Tück[4], Arantza Mongelos Garcia[5], Tiago Simões[6]

[1, 2] EDEN Digital Learning Europe, Estonia; estela.dauksiene@vdu.lt; elena.trepule@vdu.lt
[3]Baden-Wuerttemberg Cooperative State University (DHBW), Germany; jochen.ehrenreich@heilbronn.dhbw.de
[4]Knowledge Innovation Centre, Slovenia; colin@knowledgeinnovation.eu
[5]Mondragon University, Spain; amongelos@mondragon.edu
[6]European University Foundation, Hungary; tiago.simoes@uni-foundation.eu

Correspondence: Estela Daukšienė: estela.dauksiene@vdu.lt

Abstract:

QualityLink is an Erasmus+ project that focuses on discussing the quality indicators of learning opportunities leading to micro-credentials and on creating a course data aggregator that enables open course data sharing across European HEIs. Currently, such data is often unavailable, fragmented, or published in non-interoperable formats, creating barriers for learners, employers, and recognition officers seeking reliable information. As the landscape of learning opportunities grows increasingly diverse, open and standardised data becomes essential for informed decision-making. To address this challenge, QualityLink proposes a technical architecture that enables higher education institutions and other data providers to publish relevant course data using established standards such as ELM, OOAPI, Edu-API, and OCCAPI. The data aggregator platform has now been launched and is available for institutions to test, providing a practical framework for sharing and discovering high-quality micro-credential course data.

Keywords: micro-credentials, quality indicators, data aggregator, open course descriptors, standards

Summary

The QualityLink project seeks to address the fragmentation and lack of interoperability in the dissemination of micro-credential course data across European higher education. Despite the growing demand for flexible, modular learning opportunities, relevant data—including basic descriptions and quality indicators—often remains inaccessible or published in non-standardised formats. This poses significant challenges for stakeholders, including learners, employers, and recognition officers, who require reliable, open, and comparable data to inform decision-making.

To mitigate these issues, the project consortium has created a list of quality indicators (Trepulė et al., 2024) that different stakeholders address when searching for or sharing learning opportunities. The created list of quality indicators is for micro-credentials and is in line with and based on the mandatory elements of micro-credentials as defined by the European Council Recommendations on the EU approach to Micro-credentials (2022), but it is not limited to the information required there. Students, teachers, and other stakeholders rated the importance of these indicators, thereby determining their relevance and applicability for diverse stakeholders (Tück, Simões, & Ehrenreich, 2025).

The project consortium also worked on standardising open course data and creating a technical architecture for seamless data exchange (Simões & Tück, 2025). The project's suggested technical architecture facilitates seamless data publication through widely adopted standards, including the European Learning Model (ELM), Open Education API (OOAPI), Edu-API, and Open Course Catalogue API (OCCAPI). Key components of this architecture include:

- A unique course identifier to ensure consistent tracking of learning opportunities across systems;
- Automated data source discovery, leveraging existing registries (e.g., DEQAR) to enable institutions to publish data without manual registration;
- Standardised data exchange protocols, addressing interoperability and incremental data updates;
- An extended ontology, building on ELM, to incorporate quality indicators, priorities by different stakeholders during the project's research activities and events.

The course data aggregator has been launched (see https://quality-link.eu to access it), allowing higher education institutions to test the platform and contribute their course data for aggregation. By promoting standardised, open, and interoperable data sharing, QualityLink enhances transparency, supports evidence-based decision-making, and fosters collaboration within the European higher education landscape. Institutions are encouraged to test the data aggregator to validate the platform's efficacy and their data formats.

This project has been funded with support from the European Commission. This publication reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

References

EU Council. (2022). COUNCIL RECOMMENDATION of 16 June 2022 on a European approach to micro credentials for lifelong learning and employability (2022/C 243/02; Official Journal of the European Union, pp. 10–22). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022H0627(02)

Simões, T. & Tück, C. (2025). Quality Data Exchange Architecture: QualityLink report. https://quality-link.eu/project-outputs/concept-paper/

Trepulė, E., Čepauskiene, R., Braun, C. & Tück, C. (2024). Quality Domains and Indicators: QualityLink report. https://quality-link.eu/quality-domains-and-indicators/

Tück, C., Simões, T. & Ehrenreich, J. (2025). Feasibility Analysis of Indicators: QualityLink report. https://quality-link.eu/project-outputs/feasibility-analysis/

Links to standards mentioned and used while creating QualitLink data aggregator:

1EdTech (n.d.). Edu-API. https://www.1edtech.org/standards/edu-api

European Commission (n.d.). European Learning Model Browser. https://europa.eu/europass/elm-browser/index.html

European University Foundation (n. d.). Open Course Catalogue API (1.0.0-beta5). https://occapi.uni-foundation.eu/

QualityLink project (2025). Technical Specifications: Public Consultation. https://quality-link.eu/technical-specs/

SURF (n. d.). Open Education API. https://openonderwijsapi.nl/#/

The TTT Model: A Three-Step Approach to Tracing Professional Digital Competence in Teacher Education Coursework

Sigrun Lindaas Norhagen[1]

[1]Teacher Education Department, NLA University College, Norway; sigrun.norhagen@nla.no

Correspondence: Sigrun Lindaas Norhagen: sigrun.norhagen@nla.no

Abstract:

This poster presents the TTT model — a three-step analytical method for tracing the presence, breadth, and depth of Professional Digital Competence (PDC) in teacher education coursework assignments. Developed and empirically tested at a Norwegian teacher education institution, the model combines a binary technology filter with the TPACK framework and the Technology Integration Matrix (TIM) to produce a structured, replicable analysis suited for institutional self-evaluation and quality assurance. Applied to 135 mandatory coursework assignments, the model revealed significant variation across subjects and found that most technology use remained at surface level — findings with direct implications for program development and PDC policy.

Keywords: Professional Digital Competence, TPACK, Technology Integration Matrix, teacher education, coursework analysis, enacted curriculum

Background and Purpose

Professional Digital Competence (PDC) is a central aim in teacher education across Europe, enshrined in national frameworks such as Norway's Framework for Professional Digital Competence for Teachers (Norwegian Directorate for Education and Training, 2024) and informed by broader European frameworks, including DigCompEdu (Redecker, 2017). Yet how PDC manifests in students' actual learning activities remains poorly understood. A scoping review of PDC in Norwegian teacher education found that while the concept is broadly present in policy and research, its practical enactment in teaching and learning activities remains underexplored (Norhagen et al., 2024). While curriculum documents may reference digital competence, the degree to which students encounter meaningful technology integration in their mandatory coursework is often invisible to program leaders, quality assurance teams, and educational researchers (Instefjord & Munthe, 2017; Norhagen et al., in review). This opacity makes it difficult to identify gaps, monitor quality, or make informed decisions about where to strengthen PDC across a program.
This poster presents the TTT model — a practical, structured, three-step analytical method for tracing the presence, breadth and depth of technology integration in teacher education coursework assignments. Designed as a tool for program leaders and institutional self-evaluation, the model was developed and empirically tested as part of an explorative case study at a Norwegian teacher education institution, where 135 coursework assignments were collected and analysed (Norhagen, manuscript in preparation).

The TTT Model

Coursework assignments — tasks students must complete to qualify for exams — serve as concrete, analyzable artefacts that reveal whether PDC intentions translate into actual practice. The TTT model subjects these

assignments to three sequential analytical steps, producing a systematic analysis of both the breadth and depth of technology integration required of future teachers:

Step 1 — Technology Trace (Binary Filter): Each assignment is reviewed to determine whether technology, digital competence, or digital tools are explicitly required as part of the pedagogical activity, not merely a prerequisite for submission. Assignments that meet this criterion are categorised as "digital" and carried forward; the remainder are excluded from further analysis.

Step 2 — TPACK Analysis: Digital assignments are evaluated using the TPACK framework (Mishra & Koehler, 2006) to assess the integration of Technological, Pedagogical, and Content Knowledge. Each dimension is scored on a 0–3 scale, yielding a possible total of 9, and results are visualised as a radar diagram to enable profile comparison across subjects or programs.

Step 3 — TIM Evaluation: Each digital assignment is further classified using the Technology Integration Matrix (Welsh & Harmes, 2021) across five levels, from Entry to Transformation, to capture whether technology enables deeper cognitive engagement or remains a superficial add-on.

Two custom AI tools — one for TPACK scoring and one for TIM classification — were developed and used as analytical instruments alongside the researcher's own coding. This approach served as a form of analytical triangulation, enabling systematic cross-checking between the researcher's judgment and AI-generated evaluations to strengthen consistency and transparency in the coding process.

Illustrative Findings

When applied to a full cohort of master's students in teacher education at the case institution, the model revealed that only 37 of 135 assignments explicitly integrated technology. Distribution varied substantially across subjects — from 14 digital assignments in *Language* to zero in *Religion* and *Arts & Crafts*. TIM analysis showed that most digital assignments remained at Entry level, indicating that even where technology was present, it predominantly supported traditional practices rather than enabling transformative learning. These findings illustrate how the model can make hidden patterns visible in ways that are actionable for program leadership.

Contribution

The TTT model offers a replicable, transparent, and fully operationalized method for surfacing what typically remains hidden in teacher education: the practical integration of PDC in students' mandatory learning activities. Unlike theoretical frameworks alone, the TTT model has been empirically applied and produces results directly usable for institutional self-evaluation, quality assurance, and cross-program comparison. By combining a binary filter with two established frameworks for integration quality (TPACK and TIM), the model provides a situational analysis that can be adapted to different institutional contexts. While further validation is needed, this approach offers a concrete contribution to the growing body of work on how PDC can be systematically monitored and developed across teacher education programs.

References

Instefjord, E. J., & Munthe, E. (2017). Preparing professionally digital competent teachers: A study of integration of professional digital competence in teacher education. *Teaching and Teacher Education, 67*, 37–45.

Norwegian Directorate for Education and Training. (2024). *Rammeverk for lærerens profesjonsfaglige digitale kompetanse (PfDK)* [Professional digital competence framework for teachers]. https://www.udir.no/kvalitet-og-kompetanse/digitalisering-skole/rammeverk-larerens-profesjonsfaglige-digitale-komp/

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017–1054.

Norhagen, S. L. (manuscript in preparation). PDC by chance not design: Enacted curriculum in a Norwegian teacher education program.

Norhagen, S. L. (in review). Why PDC remains weakly embedded: Organisational structures and responsibility in teacher education.

Norhagen, S. L., Krumsvik, R. J., & Røkenes, F. M. (2024). Developing professional digital competence in Norwegian teacher education: a scoping review. *Frontiers in Education, 9*, 1363529. https://doi.org/10.3389/feduc.2024.1363529

Redecker, C. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu*. Publications Office of the European Union.

Welsh, J. L., & Harmes, J. C. (2021). *The Technology Integration Matrix*. Florida Center for Instructional Technology.

Surfacing the AI Assumption in Professional Certification: A Three-State Model for Modified Angoff Cut Score Panels

Marolyn Deidre Machen[1]

[1] Independent Researcher, Downingtown, PA, USA; marolyndmachen@gmail.com

Correspondence: Marolyn Deidre Machen: marolyndmachen@gmail.com

Abstract:

Cut-score panels using the Modified Angoff method ask panelists to estimate the probability that a Minimally Competent Candidate (MCC) would answer each test item correctly — a concept operationalized when individual human cognition was the unspoken unit of analysis. In 2026, with AI tools integral to instructional practice, panelists face an unsurfaced fork on every item: are they estimating MCC performance with AI assistance, without it, or some implicit mixture? Performance Level Descriptors (PLDs) rarely specify the assumption, producing credentials whose construct of competence is undefined at its boundary with AI. Written from inside an active International Board of Standards for Training, Performance and Instruction (IBSTPI) Certified Professional Instructor cut-score panel, this paper proposes a three-state model (AI-prohibited, AI-permitted, AI-required) specified in PLDs and disclosed on the credential itself.

Keywords: Modified Angoff method; Minimally Competent Candidate; Professional certification; Human-AI collaboration; Performance Level Descriptors; Credential transparency

Summary

The Modified Angoff method aggregates panelists' MCC probability estimates into a single cut score. When the AI-assumption is left implicit, panelists silently answer different questions, and aggregation produces a cut score that is mathematically coherent but semantically incoherent. A certified instructor passing such a cut score may genuinely struggle in an AI-prohibited context, or vice versa — and the certifying body, the credentialed individual, and the public the credential exists to protect cannot tell which.

This is not a methodological refinement. A professional certification is a public attestation: it allows non-experts to rely on a credential without having to verify the underlying competence. When the AI-assumption is undefined, that reliance fails at the point where it is most needed.

The proposal is structurally simple. Every PLD should specify one of three explicit states. **AI-prohibited:** the MCC is evaluated as a solo cognition; the credential attests to individual competence. **AI-permitted:** the MCC is evaluated as a cognition with discretionary access to AI; the credential attests to competence in environments where AI is available but not required. **AI-required:** the MCC is evaluated as a human-AI dyad; the credential attests to competence in joint practice. The AI-assumption state must travel with the credential — on the certificate, in the public registry — so that those who rely on it can read what it covers.

The proposal preserves the Angoff method intact. It adds a single PLD field and a single facilitation question at the start of each rating session: *"Which AI-assumption are we estimating against?"* The cost to credentialing bodies is

small. The cost of continuing without it is the slow erosion of the credential's capacity to do the public-protection work it exists for.

References

Angoff, W. H. (1971). Scales, norms, and equivalent scores. In R. L. Thorndike (Ed.), *Educational measurement* (2nd ed., pp. 508–600). American Council on Education.

Cizek, G. J., & Bunch, M. B. (2007). *Standard setting: A guide to establishing and evaluating performance standards on tests.* Sage.

Zieky, M. J., & Perie, M. (2006). *A primer on setting cut scores on tests of educational achievement.* Educational Testing Service.

Didactic Strategies in the Creation of Augmented Reality Digital Content by Pre-service Primary School Teachers

Delsa Silva Amino Cufuna[1], Josep M Duart[2], Gizeh Rangel-de Lazaro[3,4]

[1] Doctoral School, Universitat Oberta de Catalunya, Barcelona, Spain; scufuna@uoc.edu
[2] Faculty of Psychology and Educational Sciences, Universitat Oberta de Catalunya, Barcelona, Spain; jduart@uoc.edu
[3] University of Malaga. Art History Department. Malaga, Spain; gr25@soas.ac.uk
[4] School of Arts, College of Humanities, SOAS, University of London, London, UK; gr25@soas.ac.uk

Correspondence: Delsa Silva Amino Cufuna: scufuna@uoc.edu

Abstract:

In the educational context, implementing active, effective teaching strategies supported by emerging technologies such as Virtual Reality (VR), Augmented Reality (AR), and Gamification has led to significant changes in student learning processes. This research attempts to emphasize the potential of these emerging technologies to revolutionize traditional teaching methodologies, enabling educators to create immersive and interactive learning experiences that cater to diverse learning preferences.

Keywords: Augmented Reality (AR), Didactic Strategies, Game-Based Learning, Pre-service Teachers.

Summary

Methodology:

- Design: Mixed-methodological approach.
- Participants: Pre-service primary school teachers at ____ and the sample could be extended in the future to other European universities.
- Intervention: Supervision of data collection process.
- Tools: Questionnaire.
- Duration: 22 months.

Results:

- The results underscore the need for AR teacher training that combines technical and reflective skills to prepare students for the digital age.
- AR learning experience depends not only on Information and Communications Technology but also on the development of digital competencies and the evaluation of pedagogical impact.
- A growing need for effective digital skills and assessments within educational settings using AR.

Discussion:

- How do teachers perceive the pedagogical usefulness and challenges of integrating AR into their teaching practices within the Technological pedagogical content knowledge (TPACK) framework?
- How Game-Based Learning using AR improves the motivation of pre-service teachers in the creation of educational games for elementary school?

- What are the perceptions of pre-service teachers about the pedagogical usefulness and motivational potential of a game-based learning activity with AR using the Merge Cube?

Conclusion:

- Teachers recognize the potential of AR to enhance learning and student engagement, but they still face difficulties when applying it in real classrooms. More specific training and institutional support are required to connect AR with clear pedagogical goals.
- There is a wide variety of AR tools available for STEM and other fields, especially in English, but access is still unequal. Costs, language limitations, and technological requirements remain barriers that need to be addressed to ensure equity and inclusion in education.

References

Chang, H., Binali, T., Liang, J., Chiou, G., Cheng, K., Lee, S., & Tsai, C. (2022). Ten years of augmented reality in education: A meta-analysis of (quasi-) experimental studies to investigate the impact. Computers and Education, 191, 104641. https://doi.org/10.1016/j.compedu.2022.104641

Isnaniah, I., Marlina, M., & Ningsih, R. (2025). The Effectiveness of an Interactive Augmented Reality E-Book Featuring Local Wisdom of Kalimantan Selatan on English Learning Outcomes. Salud, Ciencia y Tecnología, 5, 1–16. https://doi.org/10.56294/saludcyt20252214

Wang, Q., & Li, Y. (2024). How virtual reality, augmented reality and mixed reality facilitate teacher education: A systematic review. Journal of Computer Assisted Learning, 40(2), 310–333. https://doi.org/10.1111/jcal.12949

Yilmaz, R., & Goktas, Y. (2017). Using augmented reality technology in storytelling activities: examining elementary students' narrative skill and creativity. Virtual Reality, 21, 75–89. https://doi.org/10.1007/s10055-016-0300-1

Design and validation of a Digital Competence progression model for compulsory education

Amaia Arroyo-Sagasta[1], Ane Zubizarreta Pagaldai[2]

[1] Humanities and Education Sciences Faculty, Spain; aarroyo@mondragon.edu
[2] Humanities and Education Sciences Faculty, Spain; azubizarreta@mondragon.edu

Correspondence: Amaia Arroyo Sagasta: aarroyo@mondragon.edu

Abstract:

Digital competence is established as a key competence in both the Spanish national curriculum, (Spanish Government, 2022a; 2022b) and the Basque Autonomous Community (BAC) curriculum (Basque Government, 2023a; 2023b). This is aligned with the DigComp framework promoted by the European Commission. However, there is a persistent gap between its formal inclusion in policy and its effective implementation in schools. Educational centres face significant challenges in translating digital competence into classroom practices and assessment processes (OECD, 2021). This project was developed to address this gap, moving from competence definition to a structured and actionable progression model.

The study follows a multi-phase, design-based research approach. First, a systematic review was conducted to examine the educational role of technology, based on the general research question "Why technology in education?". Secondly, an integrated theoretical foundation was constructed by combining: (a) the psycho-evolutionary developmental characterisation across stages, based on the cognitive, the social, and the emotional dimensions; (b) the curricula of Early Childhood, Primary, and Secondary Education in the BAC (Basque Government, 2023a; 2023b); (c) the DigComp 3.0 framework (Cosgrove & Cachia, 2025); and (d) General Educational Framework for Ikastolas (Antero et al., 2023). Third, a preliminary progression model for digital competence was designed. Fourthly, this progression was validated through expert judgement (six university specialists in educational technology) and practitioner feedback (fifteen teachers and education professionals). Finally, classroom implementation proposals were co-constructed through four focus groups involving 30 teachers from different educational stages.

The project resulted in a validated progression framework for digital competence from Early Childhood to Compulsory Secondary Education (ages 3-16), accompanied by proposals for its implementation in the classroom. The model provides a coherent developmental sequencing that is aligned with learners' characteristics and curricular requirements. The validation findings indicate a high level of consistency, relevance, and applicability across educational contexts.

This work contributes to bridging the gap between curriculum policy and educational practice by offering a structured and validated response to the operationalising digital competence. The framework provides schools with a solid foundation on which to adopt and implement this key competence through compulsory education, supporting both pedagogical practices and assessment processes. By integrating the curriculum, developmental psychology, and institutional educational frameworks, the project promotes a comprehensive and scalable approach to developing digital competence development in schools in the BAC. Future work should focus on developing assessment strategies aligned with the validated progression, and on replicating the process in diverse educational contexts to examine its transferability and adaptability.

Keywords: Digital Competence, Curriculum; Early Childhood; Primary Education; Secondary Education; Educational Technology

References

Antero, A., Artolazabal, A., Garaialde, E., & Ibarzabal, Z. (2023). *Bazatoz? Ikastolen Hezkuntza Marko Orokorra*. Ikastolen Elkartea.

Basque Government. (2023a). 75/2023 Dekretua, maiatzaren 30ekoa, Haur Hezkuntzaren EAEko curriculuma zehaztu eta Euskal Autonomia Erkidegoan ezartzekoa. Euskal Herriko Agintaritzaren Aldizkaria, 109, 2023ko ekainaren 9a. https://www.euskadi.eus/bopv2/datos/2023/06/2302727e.pdf

Basque Government. (2023b). 77/2023 Dekretua, maiatzaren 30ekoa, Oinarrizko Hezkuntzaren EAEko curriculuma zehaztu eta Euskal Autonomia Erkidegoan ezartzekoa. Euskal Autonomia Erkidegoko hezkuntza eredu pedagogikoari buruzkoa. Euskal Herriko Agintaritzaren Aldizkaria, 109, 2023ko ekainaren 9a. https://www.euskadi.eus/web01-bopv/eu/bopv2/datos/2023/06/2302729e.pdf

Cosgrove, J., & Cachia, R. (2025). *DigComp 3.0: European Digital Competence Framework - Fifth Edition.* Publications Office of the European Union. https://data.europa.eu/doi/10.2760/0001149, JRC144121

OECD. (2021). 21st-century readers: Developing literacy skills in a digital world. OECD Publishing. https://doi.org/10.1787/a83d84cb-en

Spanish Government. (2022a). Real Decreto 157/2022, de 1 de marzo, por el que se establece la ordenación y las enseñanzas mínimas de la Educación Primaria. Boletín Oficial del Estado, núm. 52, de 2 de marzo de 2022. https://www.boe.es/eli/es/rd/2022/03/01/157

Spanish Government. (2022b). Real Decreto 217/2022, de 29 de marzo, por el que se establece la ordenación y las enseñanzas mínimas de la Educación Secundaria Obligatoria. Boletín Oficial del Estado, núm. 76, de 30 de marzo de 2022. https://www.boe.es/eli/es/rd/2022/03/29/217

Preparing Future Teachers for Human–AI Collaboration: Insights into Emotional Intelligence and Ethical AI Use

Rita Mičiulienė[1], Rasa Didžiulienė[2], Nijolė Čiučiulkienė[3]

[1]Vytautas Magnus University, Lithuania; rita.miciuliene@vdu.lt
[2]Vytautas Magnus University, Lithuania; rasa.didziuliene@vdu.lt
[3]Vytautas Magnus University, Lithuania; nijole.ciuciulkiene@vdu.lt

Correspondence: Rita Miciuliene: rita.miciuliene@vdu.lt

Abstract:

The rapid integration of Artificial Intelligence (AI) into educational systems is fundamentally changing the teaching landscape. The focus is shifting from simply transmitting knowledge to fostering collaboration between humans and AI (Luckin, 2025; Selwyn, 2024). While technical skills are often emphasised, the future of education, according to Luckin and Cukurova (2019) depends on the integration of algorithmic efficiency and essential human qualities – particularly emotional intelligence (EI) and professional self-confidence. In teacher education, EI has evolved from being considered merely a „soft skill" (OECD, 2023) to a vital competency for conflict resolution, empathetic engagement, and effective navigation of the emotional dimensions of digital classrooms (Dolev & Leshem, 2017). Despite the increasing emphasis on emotional intelligence and self-confidence in policy and research discussions, it remains unclear how early-career teachers view the development and significance of emotional intelligence and self-confidence in teacher education programs influenced by AI-driven changes. This lack of understanding creates a significant gap: without deeper insight into how future teachers relate these competencies to emerging technologies, teacher education institutions struggle to design programmes that effectively enhance both human-centred professional competencies and digital and AI-related skills. Therefore, this study aims to explore the perspectives of pre-service teachers on the adequacy of their training in EI, self-confidence, and the ethical dilemmas posed by AI in practice. By examining how future educators navigate the relationship between human interaction and digital automation, this research seeks to inform the development of more holistic and integrity-based pedagogical frameworks.

Methodology. This research employed a qualitative methodology centred on focus group interviews. Three focus group interviews were conducted with 24 female students. The participants were final-year undergraduate education students from various pedagogical study programs. A semi-structured interview protocol was developed to encourage in-depth reflections on three main topics: (1) the perceived value and adequacy of EI development within their current teacher training programmes; (2) the level of digital literacy provided to manage AI-driven classrooms; and (3) the ethical complexities of integrating AI in academic and professional settings. The focus group format facilitated dynamic interactions, allowing participants to discuss the social and emotional implications of AI. The data were transcribed and analysed using reflexive thematic analysis following Braun and Clarke (2006). A dual analytical perspective was applied. First, an open thematic analysis was performed, followed by identifying the educator's positions along the human-AI collaboration continuum.

Findings. Following an inductive thematic analysis of the submitted transcriptions, we identified two primary thematic directions: (1) emotional intelligence as a human foundation for pedagogical agency, and (2) artificial intelligence as a contested yet unavoidable pedagogical tool.

Emotional intelligence as a human foundation for pedagogical agency. EI is regarded as an essential aspect of a teacher's professional identity, closely linked to inclusive education, classroom climate, and the prevention of

burnout. The participants in the study indicate that emotional intelligence is primarily developed through experience, reflection, and practice, rather than through formal education.

Artificial intelligence as a contested yet unavoidable pedagogical tool. AI is viewed as a source of ideas, structure and inspiration, but not as a substitute for content; as an inevitable and potentially useful tool, with its effectiveness relying on ethical, critical, and conscious use. The study participants reported several instances of AI abuse, both in academic settings and in schools, as well as instances of superficial technology use. They acknowledged that during their studies, they developed the ability to evaluate the reliability of information found on the Internet and the content generated by AI.

Not only were topics extracted from the transcripts, but also the professional attitudes that shape teachers' professional identity. *AI serves as an auxiliary tool* that amplifies emotional resources, helping to reduce workload and improve planning and organisation. However, it is important to note that decisions are ultimately made by individuals. *AI can be viewed as an ethically problematic space*, raising concerns about copying, plagiarism, privacy violations, and the loss of authenticity. Furthermore, *AI represents an inevitable future reality* becoming an integral part of the teaching profession.

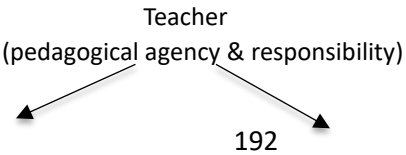
Discussion. The findings revealed that emotional intelligence and artificial intelligence were discussed by participants as distinct but equally significant dimensions of professional practice, rather than as explicitly interconnected constructs. This separation is itself analytically meaningful and informs the interpretation presented in this discussion.

Emotional intelligence and artificial intelligence as parallel professional concerns. Participants described EI primarily through everyday pedagogical experiences. Emotional competencies such as self-regulation, empathy, emotional boundary-setting, and resilience were articulated as central to sustaining pedagogical relationships and professional well-being. At the same time, artificial intelligence and broader digital tools were discussed in relation to pedagogical efficiency, planning support, ethical awareness, and concerns about academic dishonesty, data privacy, and over-reliance on technology. Here, the participants focused on practical and ethical considerations of AI use, rather than on its emotional or relational implications. The absence of explicit links between emotional intelligence and artificial intelligence in participant discourse may reflect broader tendencies in teacher education, where emotional competencies and digital literacies are typically developed in parallel but remain conceptually disconnected (Davies & Bryer, 2016; Falloon, 2020).

Interpreting emotional intelligence as a mediating layer in human–AI collaboration. While the empirical findings do not demonstrate an articulated EI–AI relationship, this study proposes that emotional intelligence may be understood as a mediating competence shaping how teachers ultimately engage with artificial intelligence in pedagogical contexts. This interpretation does not claim that participants consciously frame emotional intelligence as a condition for AI use; rather, it suggests that emotional competencies implicitly inform pedagogical judgment, ethical sensitivity, and decision-making processes that become particularly salient when integrating AI into educational practice. From this perspective, EI does not function as a technological skill but as a human regulatory mechanism. It enables teachers to evaluate when AI use is pedagogically appropriate, ethically acceptable, and aligned with learners' needs. Emotional self-regulation may support reflective AI use under conditions of workload pressure; empathy may influence considerations around learner autonomy and fairness; and emotional boundary-setting may help prevent excessive delegation of pedagogical responsibility to automated tools.

Conceptual model of teacher-mediated EI–AI interaction. To illustrate this interpretative synthesis, a conceptual model is proposed (Figure 1). The model positions the teacher as a pedagogical agent who actively regulates the relationship between emotional intelligence and artificial intelligence, rather than being replaced or directed by technological systems.

Figure 1. Conceptual model of emotional intelligence mediating teacher–AI interaction





The model does not represent a direct empirical pathway derived from participant statements. Instead, it offers a theoretically grounded interpretation that integrates the study findings into a broader understanding of human–AI collaboration in teacher education. Emotional intelligence is conceptualised as the mediating layer through which teachers interpret, constrain, and ethically enact AI use. Artificial intelligence remains a supportive pedagogical resource, while responsibility and professional judgment remain firmly situated within the human teacher.

Implications for teacher education. This interpretation highlights a critical implication for teacher education programs. Teacher education may benefit from pedagogical approaches that encourage reflective integration of emotional and digital competencies, emphasising not only *how* to use AI but also *why*, *when*, and *for whom* such use is appropriate. By framing emotional intelligence as a human anchor in emerging human–AI collaborations, this study contributes to discussions on human-centred pedagogy and ethical educational technology use. Rather than positioning AI as an autonomous pedagogical agent, the findings and conceptual model reaffirm the centrality of the teacher's emotional and ethical judgment in shaping future educational practices.

Keywords: Artificial intelligence; Conceptual model; Emotional intelligence; Teacher Training.

References

Anupreet, S. P. (2024). Emotional intelligence and ethics: a descriptive study. *Educational Administration: Theory and Practice*, *30*(6), 4246-4254.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Davies, M., & Bryer, F. (2003). Developing emotional competence in teacher education students: The emotional intelligence agenda. *Re-imagining practice - Researching change*, *1*, 136-148.

Dolev, N., & Leshem, S. (2017). Developing emotional intelligence competence among teachers. *Teacher development*, *21*(1), 21-39. https://doi.org/10.1080/13664530.2016.1207093

Falloon, G. (2020). From digital literacy to digital competence: The teacher digital competency (Tdc) framework. *Educational Technology Research and Development*, *68*(5), 2449–2472. https://doi.org/10.1007/s11423-020-09767-4

Hummel, S. (2025). Ethical and responsible ai in education: Situated ethics for democratic learning. *Education Sciences*, *15*(12), 1594. https://doi.org/10.3390/educsci15121594

Karakuş, N., Gedik, K., & Kazazoğlu, S. (2025). Ethical decision-making in education: A comparative study of teachers and artificial intelligence in ethical dilemmas. *Behavioral Sciences*, *15*(4), 469. https://doi.org/10.3390/bs15040469

Li, Z., Li, X., & Chen, J. (2025). Emotional intelligence of educators: A bibliometric review, 1998–2024. *Social Psychology of Education*, *28*(1), 99. https://doi.org/10.1007/s11218-025-10048-2

Luckin, R. (2018). *Machine learning and human intelligence: The future of education in the 21st century*. UCL Institute of education press.

Luckin, R. (2025). Nurturing human intelligence in the age of AI: Rethinking education for the future. *Development and Learning in Organisations: An International Journal, 39*(1), 1–4. https://doi.org/10.1108/DLO-04-2024-0108

Luckin, R., & Cukurova, M. (2019). Designing educational technologies in the age of AI: A learning sciences-driven approach. *British Journal of Educational Technology, 50*(6), 2824-2838.

OECD. (2023). *Future of education and skills 2030: OECD learning compass 2030*. OECD Publishing. https://doi.org/10.1787/b2e9a1f1-en

Selwyn, N. (2024). On the Limits of Artificial Intelligence (AI) in Education. *Nordisk tidsskrift for pedagogikk og kritikk: Special Issue on Artificial Intelligence in Education, 10*(1), 3–14. http://doi.org/10.23865/ntpk.v10.6062

The Dynamics of Mentor Competencies in Online Mentoring

Nijolė Čiučiulkienė[1], Rasa Didžiulienė[2]

[1] Education academy, Vytautas Magnus University, Lithuania; nijole.ciuciulkiene@vdu.lt
[2] Education academy, Vytautas Magnus University, Lithuania; rasa.didziuliene@vdu.lt

Correspondence: Nijolė Čiučiulkienė (nijole.ciuciulkiene@vdu.lt)

Abstract:

This research explores mentor competencies in online mentoring within educational contexts. Data was collected through semi-structured interviews with 12 teachers and analysed using qualitative content analysis. The findings indicate that effective online mentoring requires digital, communication, emotional, and adaptive competencies. Although participants identified challenges related to technology, engagement, and relationship-building, they also highlighted opportunities for professional growth, particularly in digital skills, communication and reflective practice.

Keywords: Online mentoring; Mentor competencies; Teacher professional development; Digital competence.

Summary

Digital technologies have expanded mentoring into online environments. Online mentoring provides flexibility and accessibility while enabling communication and professional support beyond geographical boundaries (Iqbal, 2020; Pollard & Kumar, 2021). At the same time, effective online mentoring requires specific competencies related to digital literacy, communication, relationship-building, and adaptability in virtual environments (Ciuciukiene & Miciuliene, 2019; Didziuliene et al., 2025). Understanding these competencies is essential for effective mentoring and professional development. In educational settings, mentoring plays an important role in supporting novice teachers' adaptation and professional development (Carstensen & Klusmann, 2021).

Research question: How do mentor competencies manifest in online mentoring?

The purpose of this research is to identify the competencies required for effective online mentoring.

A qualitative research approach was employed (Creswell & Poth, 2018). Data was collected through semi-structured interviews with 12 teachers and analysed using qualitative content analysis (Mayring, 2014). The findings revealed that mentoring is perceived as a collaborative process that supports professional learning, competence development, and reflection. Participants highlighted the importance of guidance, support, and knowledge sharing in mentoring relationships. Online mentoring was associated with flexibility, accessibility, and continuous communication, although challenges related to technology, interpersonal connection, and engagement were also identified. Effective online mentoring was found to depend on digital literacy, communication and collaboration skills, emotional intelligence, continuous professional development, and reflective practice. Overall, the findings suggest that strengthening mentor competencies is essential for ensuring the quality, effectiveness, and sustainability of online mentoring in contemporary education.

References

Carstensen, B., & Klusmann, U. (2021). Supporting novice teachers: The role of mentoring. *Teaching and Teacher Education, 106*, 103451. https://doi.org/10.1016/j.tate.2021.103451

Ciuciulkiene, N., & Miciuliene, R. (2019). Mentoring styles and their contribution to pedagogical and didactic competence development. *Society. Integration. Education, 1,* 131–143. https://doi.org/10.17770/sie2019vol1.3818

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.

Didziuliene, R., Ciuciulkiene, N., & Karaseviciute, S. (2025). The links between teacher's digital competence and professional motivation. *Ubiquity Proceedings, 6*(1), 26. https://doi.org/10.5334/uproc.194

Iqbal, H. (2020). *E-mentoring: An effective platform for distance learning*. *e-mentor, 2*(84), 54–61. https://doi.org/10.15219/em84.1463

Mayring, P. (2014). Qualitative content analysis: theoretical foundation, basic procedures, and software solution. *Approaches to Qualitative Research in Mathematics Education,* 365-380. https://doi.org/10.1007/978-94-017-9181-6_13

Pollard, A., & Kumar, S. (2021). Mentoring at a distance: A review. Distance Education, 42(3), 395–412. https://doi.org/10.1080/01587919.2021.1956305

Multimedia Use in Higher Education: Reflections from the Action Research Activities within the e-Universities Project (2023–2025)

Martina Hribar[1], Mirna Babić[2], Sandra Kučina Softić[3], Tona Radobolja[4], Jasminka Maravić[5], Klara Bilić[6]

[1] Department of Research, Croatian Academic and Research Network – CARNET, Croatia; mmladan@carnet.hr
[2] Department of Research, Croatian Academic and Research Network – CARNET, Croatia; mbabic@carnet.hr
[3] Department of Education and Educational Technologies, University Computing Centre of the University of Zagreb – Srce, Croatia; sskucina@srce.hr
[4] Department of Education and Educational Technologies, University Computing Centre of the University of Zagreb – Srce, Croatia; tona.radobolja@srce.hr
[5] Department of Research, Croatian Academic and Research Network – CARNET, Croatia; jmaravic@carnet.hr
[6] Department of Research, Croatian Academic and Research Network – CARNET, Croatia; kmestric@carnet.hr

Correspondence: Mirna Babić: mbabic@carnet.hr

Abstract:

This paper presents the pilot study (2023–2024) and the action research "Multimedia Use in Higher Education" (2025–2026), conducted within the e-University (e-Sveučilišta) project coordinated by Croatian Academic and Research Network – CARNET in partnership with University Computing Centre – Srce (University of Zagreb), the Agency for Science and Higher Education (AZVO), and the National and University Library (NSK), Croatia. The pilot study involved 21 higher education institutions with 75 participants — teachers, IT professionals, and librarians — who received six types of multimedia equipment. The methodological framework for both studies is action research: a continuous, reflective, and collaborative process in which participants simultaneously act and reflect on their own practices. In addition to delivering multimedia equipment, more than twenty educational activities were organised, covering pre-production and post-production of audiovisual content, pedagogical course design, interactivity in online environments, copyright, and digital repositories. The action research highlighted the importance of students' active role in creating digital educational resources and the significance of equipment availability for preparing and delivering teaching and learning in the digital age. The research also identified structural barriers that go beyond the project scope: the absence of criteria for evaluating teachers' digital competencies and digital educational outputs within academic advancement requirements is identified as a fundamental prerequisite for the long-term sustainability of digital transformation in higher education, leading to the initiation in 2025 of work on the document "Guidelines for the Evaluation of Digital Competencies in Higher Education". The most valuable outcome of the research is the building of a community of practice whose work will continue within the CARNET HUB.

Keywords: digital transformation, higher education, multimedia in higher education, e-University project, community of practice, Croatia

Summary

The e-University project (e-Sveučilišta) is one of Croatia's most comprehensive national digital transformation initiatives in higher education, funded through the National Recovery and Resilience Plan 2021–2026. Led by Croatian Academic and Research Network – CARNET in partnership with University Computing Centre – Srce (University of Zagreb), the Agency for Science and Higher Education (AZVO), and the National and University Library (NSK), Croatia, the project invested in digital teaching infrastructure, systematic development of digital

competencies, creation of open digital educational resources, and the establishment of a digital maturity framework for higher education institutions at the national level.

The pilot study (2023–2024) involved 21 institutions and 75 participants, who were provided with six types of multimedia equipment and participated in numerous educational activities covering audiovisual content production, pedagogical course design, interactivity in online environments, copyright, and digital repositories, to mention a few. The second phase of action research (2025–2026) extended this work with a focus on students' active participation in creating digital educational content (Bilić Meštrić, Maravić & Hribar, 2024; Kemmis & McTaggart, 1988), yielding concrete outcomes: students now produce podcasts and video descriptions of histological slides for future generations (Kužir et al., 2025; Poletto et al., 2025), teachers are redesigning their courses using the flipped classroom approach, and librarians are managing digital collections of open educational resources. Multimedia has ceased to be merely a technical tool and has become a medium for pedagogical change. Key structural barriers were consistently identified: the absence of criteria for evaluating digital competencies and digital educational outputs within academic advancement requirements (Redecker & Punie, 2017), the lack of dedicated multimedia support teams at institutions, and the absence of mandatory pedagogical training for academic staff. These barriers are being addressed through the document "Guidelines for the Evaluation of Digital Competencies in Higher Education", intended to inform policy dialogue with the Ministry of Science, Education and Youth (MZOM), AZVO, the Rectors' Council, and the National Council for Higher Education. The most enduring outcome of the research is the community of practice built over two years, whose work will continue within the CARNET HUB as a centre for digital teaching excellence, knowledge exchange, and peer support.

References

Bilić Meštrić, K., Maravić, J., & Hribar, M. (2024). *Multimedia use in higher education: e-Universities project*. In M. Saqr, S. López-Pernas, M. A. Conde, M. Raspopović Milić & E. Kisić (Eds.), *Proceedings of the 15th International Conference on e-Learning (eLearning 2024)* (pp. 127–138). Belgrade Metropolitan University. https://ceur-ws.org/Vol-3938/

Kemmis, S., & McTaggart, R. (1988). *The action research planner*. Deakin University Press.

Kužir, S., Devčić, L., Škvorc, N., Serdar, N., Poletto, M., Ivanić, J., Ključanin Franić, Ž., Horvatek Tomić, D., & Poletto, M., Maćešić, N., Ivanić, J., Kužir, S., & Bilić, K. (2025). *From planning to implementation: How the Faculty of Veterinary Medicine is building a digital future* [Conference poster]. In M. Saqr, S. Lopez-Pernas, M. A. Conde, M. Raspopović Milić & E. Kisić (Eds.), *Proceedings of the 15th Central European Conference on Information and Intelligent Systems (CECIIS 2025)*. Faculty of Organisation and Informatics, University of Zagreb. https://archive.ceciis.foi.hr/public/conferences/2025/PosterPresentation/P1.pdf

Redecker, C., & Punie, Y. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu*. Publications Office of the European Union. https://doi.org/10.2760/159770

ACTION LABS

Project synergy session for EDEN DLE institutional members

Estela Daukšienė[1], Marc Romero[2], Teresa Romeu[2], Zrinka Popić[3], Giedrė Tamoliūnė[1], Vlad Mihaescu[4], Janika Leoste[5], Jochen Ehrenreich[6], Marieke Decock[7], Mildred Kyte[8]

[1] Vytautas Magnus University, Lithuania; EDEN DLE, Estonia; estela.dauksiene@vdu.lt; giedre.tamoliune@vdu.lt
[2] UOC, Spain; mromerocar@uoc.edu; tromeu@uoc.edu;
[3] University Computing Centre, University of Zagreb, Croatia; zrinka.popic@srce.hr;
[4] Politechnica University of Timisoara, Romania; vlad.mihaescu@upt.ro;
[5] Tallinn University, Estonia; leoste@tlu.ee;
[6] DHBW, Germany; jochen.ehrenreich@dhbw.de;
[7] Itec, imec research centre of KU Leuven, Belgium, marieke.decock@kuleuven.be;
[8] Western Norway University of Applied Sciences, Norway, mildrid.kyte@hvl.no

Correspondence: Estela Dauksiene, estela.dauksiene@vdu.lt

Session moderator: Estela Daukšienė, EDEN DLE Management Board member.

Description:

The Project Synergy Session is a 90-minute workshop focused on fostering international collaboration in digital education and educational innovation. This session aims to strengthen EDEN DLE institutional-member partnerships and identify potential collaborative activities by addressing the key conference topics of Beyond Technology: Human-AI Collaboration for Learning and Teaching. It also delves into conference topics such as: Artificial Intelligence applications in teaching and learning; Institutional transformation, capacity-building, and professional learning; and Research and assessment innovation: digital assessment and micro-credentials.

The following projects or research initiatives by EDEN DLE institutional members are presented in the session:

- "Challenges of genAI in HE: promoting its critical use among students" by Marc Romero, Teresa Romeu, UOC, Spain. The research initiative is based on published research results (Romeu Fontanillas et al. 2025, Challenges of generative artificial intelligence in higher education: promoting its critical use among students. RIED-Revista Iberoamericana de Educación a Distancia, 28(2). https://doi.org/10.5944/ried.28.2.43535) and focuses on further collaboration by creating a consortium and applying for further project funding.
- "STTAIRS - Strengthening Teacher Training with AI through Remote-learning Spaces" by Zrinka Popić, University Computing Centre, University of Zagreb (SRCE), Croatia. This Erasmus+ project designs training programmes that integrate artificial intelligence tools into teachers' professional development and is building an equitable educational ecosystem grounded in inclusion, well-being, and ethical technology. Key results: free repository of AI materials for educators and policy recommendations on evidence-based guidance for ethical AI integration. https://sttairs.cafierasmus.gal/
- "WINDEE - Well-being in Digital Education Ecosystem" (ERASMUS-EDU-2024-POL-EXP-DIGITAL, ID 101195779) by Giedrė Tamoliūnė, Vytautas Magnus University, Lithuania, and Augustė Volungevičiūtė, EDEN DLE, Estonia. WINDEE aims to enhance digital well-being in education by equipping students and educators with tools, training, and environments that support healthy, focused, and engaging use of digital technologies. Key results: Digital well-being framework, educator training resources, stakeholder community and policy recommendations. https://windee.eu

- "E³UDRES² 2.0 - Engaged and Entrepreneurial European University as Driver for European Smart and Sustainable Regions 2.0" by Vlad Mihaescu, Politechnica University of Timisoara, Romania. The E³UDRES² university alliance (https://eudres.eu/) created and published a micro-credential framework, launching a call and piloting around 20 modules until the end of 2026. The E³UDRES² team, coordinated by colleagues from UPT, also developed an educational LMS platform for educational offerings available at https://arena.eudres.eu/learning/
- "AI-Transformed: Competence, Culture and Capacity for GenAI in Education and Training" by Janika Leoste, Tallinn University, Estonia. The AI-TransformED project aims to build systemic, scalable, and ethically grounded capacity for integrating generative artificial intelligence (GenAI) across secondary, vocational, and higher education. AI-TransformED equips education providers with tools and a strategic model to govern GenAI adoption through structured diagnostics, scenario-based educator training, inclusive experimentation, and long-term policy alignment. Key deliverables: AI readiness assessment toolkit, Competence Framework for Generative AI Pedagogy, Micro-credentialing framework, GenAI use case collection, policy recommendations, etc.
- "DI-daktika / AI Didactics - Questioning Digital Didactics in School Education with the Elements of AI" (This research No. P-EDU-23-1 is co-funded by the European Union (the project "Breakthrough in Educational Research" No 10-044-P-0001) under the 1st April 2025 Agreement with the Research Council of Lithuania (RCL) and the 17th April 2025 Joint Activity Agreement with Vytautas Magnus University project no. P-EDU-23-1) by Estela Daukšienė, Vytautas Magnus University, Lithuania. The project aims at researching teachers' use of AI in teaching, learning and assessment. Key results (in development): publications, teacher use of AI cases, policy recommendations.
- "QualityLink: Open Standards and Tools for Sharing Course Data across EHEA" by Jochen Ehrenreich, DHBW, Germany and Estela Daukšienė, EDEN DLE, Estonia. This Erasmus+ project (2023-1-DE01-KA220-HED-000161253) tested different micro-credentialing standards and their interoperability. It developed standards and data specifications for sharing course data across different systems, proposed quality indicators for courses leading to micro-credentials, and created an open course data aggregator. All testing initiatives and their reports are available at https://quality-link.eu.
- "AI-TEACH - Advancing AI literacy through the development of capacity building modules for teacher education" by Marieke Decock, KU Leuven, Belgium, and Mildrid Kyte, Western Norway University of Applied Sciences, Norway. This Erasmus+ Teacher Academy project (101196600) offers a programme for pre-service and in-service secondary school teachers on AI literacy (focusing on 'Learning about AI', 'Learning with AI' and 'Use AI to learn about learning'). https://ai-teach.d-teachtraining.com

EDEN Project Synergy session engages in short presentations, structured discussions, idea sharing, and collaborative planning to explore how these themes can drive joint initiatives. The workshop facilitates the exchange of best practices, the development of new project concepts, and the strengthening of networks among EDEN DLE members.

Key Takeaways:

- Innovative activities of EDEN DLE institutional members;
- Potential collaborations of our institutions;
- Dissemination and sharing of international projects.

Designing Personalised Human-AI Instruction Practices

Guy Cohen[1], Alla Bronshtein[2], Adi Yaakov Azaria[3], Chen Bitton[4], Merav Rotary Saban[5], Yaffa Krieff[6], Anat Cohen[7]

[1] School of Education, Tel Aviv University, Israel; guycohen@mail.tau.ac.il
[2]Faculty of Medical & Health Sciences, Tel Aviv University, Israel; allab@tauex.tau.ac.il
[3]School of Education, Tel Aviv University, Israel; adiyaakov@mail.tau.ac.il
[4]School of Education, Tel Aviv University, Israel; chenbitton@mail.tau.ac.il
[5]School of Education, Tel Aviv University, Israel; meravrotary@mail.tau.ac.il
[6]School of Education, Tel Aviv University, Israel; yafak@tauex.tau.ac.il
[7]School of Education, Tel Aviv University, Israel; anatco@tauex.tau.ac.il

Correspondence: Guy Cohen: guycohen@mail.tau.ac.il

Description:

Across K-12, higher education, and lifelong learning, the question of AI's added value in supporting instruction is deeply connected to how we, as educators, intentionally design that support to reflect our students, our disciplines, and our professional values. This action lab invites you to explore that opportunity with us.

Rather than focusing on ready-made generic best practices, we will work together on your own instructional idea. Through a guided and highly interactive design process, you will develop a personalised Human-AI instruction practice grounded in your specific teaching context.

Participants will use a structured AI-guided design process that supports their thinking step by step. Instead of providing ready-made lesson plans, the AI will guide them through key questions, helping them clarify their goals, adapt ideas to their context, and refine their instructional design.

By the end of the action lab, participants will leave with a clearly articulated, personalised Human-AI instruction practice developed from their own context, whether teaching young learners, adolescents, or university students, as well as a structured framework and practical tools to sustain and further develop their design beyond the session.

The action lab will also open a conversation on how individually developed instructional practices can evolve into shared organisational repositories of AI-supported teaching designs.

Key Takeaways:

- A personalised Human-AI instruction practice ready to implement in your own context.
- A clear step-by-step design template for structuring AI within instruction.
- A set of guiding questions to help you adapt and refine AI-supported activities over time.
- A framework for transforming individual AI-supported practices into shared organisational resources.

Participant Interactivity:

This action lab is highly interactive and design oriented.

Participants will bring a real instructional ideas from their own practice and work through a guided design process. During the session, they will:

- Clarify what meaningful learning looks like in their classroom or course
- Identify where AI can amplify engagement, differentiation, and feedback
- Design a structured Human-AI instructional interaction aligned with their goals
- Refine their design through guided reflection and peer exchange

Through structured prompts and AI-supported reflection, participants will develop and refine their instructional designs. Small-group exchanges will allow educators from K–12 and Higher Education to compare approaches and contextual adaptations. Participants will leave with a clear pathway and practical tools to sustain and further develop their instructional designs beyond the session.

We invite participants to bring an instructional idea and explore it together.

Acknowledgements

This action lab brings together insights from two projects funded by the European Commission: AI-EmpaTe (Erasmus+ Programme, Grant Agreement No. 2024-1-LV01-KA220-HED-000250857) and EffecTive (Horizon Europe, Grant Agreement No. 101132603).

BETTER 2040: An action lab on traversing the complexity and crisis of AI in Higher Education

Peter Bryant[1], Craig Gilliver[2], Peter Bryant[3], Donna Lanclos[4], Lawrie Phipps[5]

[1]School of Business Analytics and Marketing, University of Sydney Business School, Australia; peter.j.bryant@sydney.edu.au
[2] School of Strategy, Innovation and Technology, University of Sydney Business School, Australia; craig.gilliver@sydney.edu.au
[3]School of Business Analytics and Marketing, University of Sydney Business School, Australia
[4]Independent Researcher, North Carolina, US
[5] University of Chester, UK

Correspondence: Peter Bryant; peter.j.bryant@sydney.edu.au

Description:

This highly interactive and innovative action lab will engage participants in collectively exploring the existential technological and epistemic challenges of identity, institutional value, humanity, professional status and leadership that have shaped higher education through sequences of recurring crises. As a conceptual, policy, and strategic force, AI has intensified the complexity of learning and teaching design and reshaped the technological infrastructure that supports both what and how we teach. In response to generative AI, higher education practitioners face ongoing debates and strategic decisions about AI's potential (or perceived potential) to transform the sector and the ongoing balance between AI engagement and the critical 'human' aspects of learning.

Action Lab Premise

It's December 2026. The University of Banford is the world's leading manufacturer of better. Banford is a university built on tradition, modernity and disruption. The University is ready to launch its new strategy BETTER 2040. This is a future-forward roadmap that reimagines how we learn, teach and discover, building Banford to deliver on the needs, expectations, and challenges of future generations of learners and researchers. BETTER 2040 positions the university to remain relevant, resilient, and impactful for a society and planet in constant crisis. Critical to our vision is the direct engagement of our community of staff and students in the co-creation of BETTER 2040.

Inspired by Baudrillard's (1994) concept of hyperreality, this action lab invites participants to join a fictional institution - The University of Banford. Through immersive video scenarios, the leaders of the University will guide participants through the transitional and uncertain spaces that define technological and epistemological practice in a contested era of generative trust. Engaging in three collaborative time-sensitive activities known as a changehack (Bryant et al., 2025; Bryant et al., 2019), participants will navigate the challenges of building a university caught in the epistemic and organisational tensions of AI adoption as they prepare the University of Banford for the next generation of its existence (BETTER 2040). Participants will develop strategic plans that operationalise the pedagogical intersections of humanity and AI in the context of the University of Banford, challenging and integrating the critical tensions that shape academic practice in a modern (traditional) university.

From the SDVC for the Future

We are committed to delivering an accessible, personalised education future for the next generation. We are committed to being better. Be better today and Lead Tomorrow. Through our BETTER 2040 vision, Banford will advance excellence and innovation, for impact, by strategically aligning people, processes, and priorities within a dynamic ecosystem of continuous responsibility and sustainability. In a time of accelerating digital disruption, global uncertainty, and shifting expectations of higher education, BETTER 2040 ensures Banford remains future-focused. We will shape an education ecology that empowers graduates to thrive, lead, and create meaningful impact in a rapidly changing world.

Key Takeaways:

- **Develop informed sense-making capabilities** to interpret and respond to complexity, crisis, and uncertainty created by AI adoption in higher education leadership, teaching, and learning contexts.
- **Critically examine the interplay between AI and humanity in higher education**, articulating the epistemic, ethical, and institutional tensions shaping academic identity, professional practice, and student learning.
- **Design collaborative, strategic responses to AI-driven disruption** by co-creating plausible, future-focused plans that balance innovation, institutional values, generational change and sustainable pedagogical practice.
- **Translate immersive scenario insights into actionable leadership practice**, building on the global experiences of the moderators and identifying concrete actions participants can take within their own institutions to navigate crisis, influence policy, and steward equitable AI-enabled futures.

Participant Interactivity:

Participants will work in small groups through a sequence of provocative challenges posed by the leadership of the University of Banford to explore and make sense of the question:

How can we find equilibrium and continue to lead innovation in teaching and learning within a complex, uncertain, and ever-changing sector in crisis?

The capacity to engage in sensemaking (Picione & Lozzi, 2021) is critical to do more than cope with or be ignored by complexity and crisis, but to navigate it and finds ways of leveraging it for good. Sensemaking is the process by which individuals interpret and give meaning to complex, novel, or unexpected events or crises. It involves creating plausible narratives to understand their experiences and to guide their actions.

By drawing on the diverse experiences and perspectives in the room, we will engage participants in guided sense-making and co-design this equilibrium and develop strategies for a future that is both imagined and increasingly real. Participants will leave the action lab with a deeper sense of how complexity and crisis are shaping educational leadership, technology adoption and enablement and teaching and learning practices, and most importantly, an empowered sense of what they can do about it at their institutions.

Wellbeing in the AI University: Caring for the human in a human-AI era

Mychelle Pride[1], Kate Lister[2]

[1] Pro Vice Chancellor Students Office, Open University, UK; Mychelle.pride@open.ac.uk
[2] Academic Affairs, Arden University, UK; Klister@arden.ac.uk

Correspondence: Mychelle Pride: Mychelle.pride@open.ac.uk

Description:

As artificial intelligence conversations shift from AI *for* cheating to AI *for* learning and focus on pedagogy, the conversation now also needs to turn to the wellbeing implications for both students and staff. Teaching is a caring profession and how we care for our students and staff is more important than ever. A recent UK survey on student use of AI (Stephenson & Armstrong, 2026) reports rising levels of anxiety over the past three years related to accusations of cheating, environmental impacts, and uncertainty about future job markets shaped by AI. The report recommends institutions invest in research to better understand students' use of AI for companionship, advice and support with loneliness. Similarly, a recent study suggests a link between AI usage and self-reported levels of stress, anxiety, and burnout in university staff (Cajnko & Cajnko, 2025). The study suggests that the need to learn and master new technologies, often without sufficient training, combined with uncertainty over the future and fear of automation, is leading to higher levels of stress and anxiety in both academic and professional staff.

This action lab invites participants to explore the psychological, relational and cultural impacts of AI in Higher Education, and to explore how institutions can create environments where wellbeing is centred. Participants will discuss emerging tensions, identify risks and opportunities, and collectively generate practical actions institutions can take to protect wellbeing in an AI-enabled university.

Big questions for debate

1. How does AI reshape what it means to 'be a student' or 'be an academic'
2. Is AI reducing or increasing student stress and anxiety?
3. Is AI improving staff wellbeing, or is it shifting and intensifying academic workload, adding stress and anxiety?
4. Will AI widen wellbeing inequities?
5. What would a wellbeing-positive AI university actually look like?

Key Takeaways:

Participants leave with:

- A clearer understanding of AI's wellbeing implications
- Insights from cross-institution discussion
- A short list of practical institutional actions

Participant Interactivity:

The session will begin with a pre-prepared AI provocation. Prior to the session, the facilitators will have prompted an AI chatbot: "You are an AI observing universities in 2035. Describe how AI has changed student and staff wellbeing." The response will be shared with the room and participants will be asked, "What does AI get wrong about universities?'.

The second short activity is a live AI poll, 'The Room Decides'. Participants will be asked to vote on statements such as 'AI will ultimately improve student wellbeing', 'AI will increase staff burnout', 'Universities are underestimating the psychological impact of AI'. Results will be displayed and participants will be asked what surprises them about the responses.

Participants will then work on tables or form small groups. Each group will receive one big question to debate, with prompts to stimulate conversation. They will be tasked to identify one risk, one opportunity and one institutional action. The groups will then come back together for collective sense-making to create a shared AI Wellbeing Map.

The final reflection will provide participants with the provocation:

> "If we want teaching to remain a caring profession and universities places for humans to flourish in an AI era, what must we protect and what must we redesign?"

Participants will write one commitment or idea on a postit note and responses will be shared with participants.

The presenters will collate the responses from across the workshop and will share a summary with all participants after the conference.

References

Cajnko, P., & Cajnko, K. (2025) The Implementation of Artificial Intelligence and Its Impact on Stress, Anxiety, and Burnout Levels Among Managers and Professors. *The Asian Conference on Education & International Development 2025 Official Conference Proceedings.* Available online at https://www.researchgate.net/profile/Petra-Cajnko/publication/392719022_The_Implementation_of_Artificial_Intelligence_and_Its_Impact_on_Stress_Anxiety_and_Burnout_Levels_Among_Managers_and_Professors/links/694a59c827359023a00f3d4d/The-Implementation-of-Artificial-Intelligence-and-Its-Impact-on-Stress-Anxiety-and-Burnout-Levels-Among-Managers-and-Professors.pdf

Stephenson, R., & Armstrong, C. (2026) Student Generative Artificial Intelligence Survey 2026 Student Generative Artificial Intelligence Survey 2026 - HEPI

Designing for Inclusive Learning, Teaching and Assessment in an AI World

Torunn Gjelsvik[1]

[1] International Council for Open and Distance Education – ICDE, Norway, gjelsvik@icde.org

Correspondence: Sophia Javaid: javaid@icde.org

Names Surnames and organizations of the moderators/panellists:

Torunn Gjelsvik, International Council for Open and Distance Education - ICDE
Julie Lindsay, University of Southern Queensland
Kate Lister, Arden University
Mychelle Pride, The Open University (UK)
Nicole Johnson, Canadian Digital Learning Research Association (CDLRA)

Description:

AI is now a defining force in open, distance, and digital education, impacting how institutions design learning, teaching, and assessment. All world regions are acting with shared urgency but differing policy frameworks and pedagogical assumptions. This Action Lab brings together expert panellists from three regions of ICDE's member base to explore what inclusive design demands when AI is an active participant in the learning ecosystem.

Moderated by ICDE Secretary General Torunn Gjelsvik, the session invites debate grounded in the panellists' work across ICDE and their own professional diverse backgrounds. Short opening statements will set the scene before the group tackles key questions including: Is AI a partner, a tool, or something else—and does that shape inclusivity? Who is included or excluded in "inclusive assessment" today? Can creativity and academic integrity co-exist? And what barriers most limit inclusive learning, teaching, and assessment in an AI world? Participants will leave with sharper insight and cross-regional perspectives.

Key Takeaways:

- A deepened understanding of what 'inclusive design' requires when AI is an active participant in the learning ecosystem, not merely a tool
- Exposure to how institutions across world regions are responding differently or similarly to AI integration — and why this matters
- At least one concrete shift in thinking and one committed next step to bring back to their own institution

Participant Interactivity:

Interactive Engagement will be encouraged using the Mentimeter tool where the audience can provide feedback to statements/questions related to the topic, and the panellists will also be invited to give their views.

Key questions include:

1. Is AI a partner, a tool, or something else entirely, and does our answer determine how inclusively we design?
2. When we say 'inclusive assessment' in an AI world, who are we including, and who are we inadvertently excluding?
3. Can we design for creativity and academic integrity simultaneously, or must we choose?

Collecting more detailed responses for the following if time permits:

4. What are the greatest barriers to inclusive learning, teaching, and assessment in an AI world?
5. How can we learn from other regions and institutions and work together towards shared solutions to this global challenge?
6. What strategies do you think are most effective for promoting sustainable solutions in your area?
7. Describe a successful collaboration you have seen or experienced for inclusive education in an AI world.

The moderator will encourage participants to elaborate where interesting answers are provided and utilise opportunities for debate. The session will end with a summary of key opinions and next steps for involvement in related ICDE initiatives.

Show Me What You Know: Intentional Cognitive Offloading, Teacher Agency and Human Value in AI-Rich Education

Janika Leoste[1]

[1]Tallinn University, Estonia; leoste@tlu.ee

Correspondence: Janika Leoste: leoste@tlu.ee

Description:

This Action Lab invites participants to examine cognitive offloading as a critical capability in human-AI collaboration for learning and teaching. In everyday academic life, LLMs can reduce overload, support drafting, structure ideas, and make complex tasks feel manageable. Yet many educators also sense a more uncomfortable pattern: we may be over-consuming AI support because it offers quick comfort, speed, and relief, even when the task still belongs to our own professional judgement. The lab therefore asks a high-stakes question: when does cognitive offloading strengthen educators, and when does it quietly erode confidence, responsibility, and agency?

The session links directly to the EDEN 2026 theme by focusing on the human, relational, and ethical dimensions of AI use. It also connects with an EdTech Talents knowledge service on higher education faculty upskilling for meaningful LLM use in teaching and learning. A recent class experiment provides one starting point: students were asked to use GPT to understand what was required to pass a course, and their responses revealed that AI can help surface ambiguity in course design, attendance rules, and assessment criteria, but it cannot replace clear pedagogical responsibility or human interpretation. AI becomes not only an assistant, but also an audit lens.

At the same time, a revealing trend is emerging. Students may use AI extensively themselves, yet they still tell teachers, very explicitly, that in the classroom they want to see what the teacher knows without AI. They have a right to expect this. The question is not whether teachers use AI at all, but what unique human value remains visible, trusted, and worth not replacing. The lab will therefore ask what teachers should deliberately keep as human cognitive work, which tasks can be responsibly offloaded, and which should remain under clear human control when student data, care, or ethical judgement are involved. This includes limits around student facing communication, where even routine emails may contain personal data.

The moderator will also bring a current practice example: because written feedback can now be questioned as authentically human, she has shifted toward oral face-to-face feedback, while still using short, clearly marked avatar videos as supplemental teaching material. Real is real, artificial is artificial, and both can have a place where their role is transparent.

The purpose of the session is not to shame AI use, but to restore intentionality, dignity, and self-confidence. By the end of the lab, participants will have mapped their own patterns of helpful and harmful offloading, reflected on the

possibility of AI detox, and identified practical ways to reclaim 4 to 5 hours per week for rest, reflection, creativity, or richer human interaction.

Teaching with AI Tutor Pro (Part I of a Two-Part Action Lab)

Ron Owston[1]

[1] Research Associate AI in Higher Education, Contact North | Contact Nord, Canada; ron@contactnorth.ca

Correspondence: Ron Owston: ron@contactnorth.ca

Description:

AI Tutor Pro is a free AI-supported learning app from Contact North | Contact Nord that supports independent study and teaching in online and face-to-face courses. In this 45-minute Action Lab, participants will work directly with the tool and examine how it can be used in authentic higher education settings. The session draws on features of AI Tutor Pro, including its Agent Tool, Voice Mode, verified STEM answers, and LMS integration, while also showing how it connects with its companion app, AI Teaching Assistant Pro, featured in Action Lab Part II. The lab will focus on practical teaching questions rather than simply demonstrating its features: Where can an AI tutor add value for students? How should it be introduced in a course? What kinds of guidance, boundaries, and safeguards are needed for responsible use?

Participants will test selected functions, discuss use cases with peers, and consider how AI Tutor Pro can support student learning, engagement, and independent study without displacing sound teaching practice. The session will also address issues that matter to institutions and instructors, including privacy, intellectual property, security, and expectations for trustworthy AI-supported learning. The app responds in 30 languages and does not collect personally identifying information. The discussion will address what this means for access, privacy, and institutional fit in diverse contexts. Attention will also be given to the relationship between AI Tutor Pro and instructional routines, assessment, and student support. Drawing on more than 2.5 million interactions by students and educators worldwide, the lab will situate AI Tutor Pro within a broader conversation about practical adoption, academic quality, and institutional readiness. Participants will leave with concrete ideas for classroom use, a clearer understanding of implementation options, and peer-informed perspectives on where AI tutoring is useful, where caution is needed, and how such tools can be integrated into teaching with purpose.

Key Takeaways:

- Identify practical ways AI Tutor Pro can be used in online and face-to-face courses to support student learning and independent study.
- Examine how features such as Voice Mode, the Agent Tool, verified STEM answers, and LMS integration may fit different teaching contexts.
- Consider the pedagogical limits of AI tutoring and where instructor guidance and course design still matter most.
- Discuss privacy, intellectual property, security, and trust issues that shape institutional use of AI tools.
- Leave with at least one concrete classroom use case and one implementation question to explore further with colleagues.

Participant Interactivity:

Participants will be engaged throughout the session rather than positioned as an audience. After a brief framing demonstration, they will test selected AI Tutor Pro functions individually or in pairs and respond to short prompts about where the tool could be most useful, least useful, or potentially problematic in their own settings. Small-group discussion will focus on course use cases, student guidance, and institutional concerns such as trust, privacy, and academic boundaries. These discussions will feed into a moderated whole-group exchange in which participants compare perspectives, question assumptions, and share practical applications. The session will close with each participant identifying one near-term use they could try and one unresolved issue they would want to examine further in their own institution.

Teaching with AI Teaching Assistant Pro (Part II of a Two-Part Action Lab)

Ron Owston[1]

[1] Research Associate AI in Higher Education, Contact North | Contact Nord, Canada; ron@contactnorth.ca

Correspondence: Ron Owston: ron@contactnorth.ca

Description:

This Action Lab continues the exploration of Contact North | Contact Nord's free AI-supported apps by focusing on AI Teaching Assistant Pro. This app is designed to help educators prepare course materials more efficiently and support day-to-day teaching practice. In this 45-minute session, participants will work with the app directly and examine how it can be used to assist with the design and preparation of course resources in higher education. The session will concentrate on specific academic tasks that consume instructor time, including the drafting of syllabi, quizzes, PowerPoint slides, and short instructional videos called Learning Shorts. Participants will also explore newer features such as Syllabus Q&A and the Study Guide tool and consider how these tools may fit into existing teaching routines.

The lab is designed for instructors, educational developers, and academic leaders who want to assess where an AI teaching tool is genuinely useful and where human judgement still needs to lead. The discussion will address practical questions such as these: Which teaching tasks can be streamlined without lowering quality? How can generated materials remain accurate, course-specific, and pedagogically sound? What are reasonable boundaries for the use of AI in course preparation? Attention will also be given to institutional issues, including privacy, intellectual property, security, and expectations for responsible academic use.

Participants will test selected features, discuss use cases with peers, and reflect on how AI Teaching Assistant Pro connects with its companion app, AI Tutor Pro, in supporting teaching and learning. The session will place the app within a wider conversation about workload, course design, and the careful adoption of AI tools in higher education. Participants will leave with practical ideas for immediate use, a clearer sense of appropriate implementation, and a more critical understanding of where AI can save time and where it requires close academic oversight.

Key Takeaways:

- Identify teaching and course-preparation tasks for which AI Teaching Assistant Pro may save meaningful time.
- Examine how features such as syllabus creation, quiz generation, slide building, Learning Shorts, Syllabus Q&A, and Study Guide tools may fit real teaching contexts.
- Consider how to maintain academic quality and instructor judgement when using AI to generate course materials.
- Discuss privacy, intellectual property, and security issues that affect institutional acceptance of AI teaching tools.

- Leave with concrete ideas for applying the tool in course planning, resource development, and teaching support.

Participant Interactivity:

Participants will be engaged as active contributors throughout the session. After a short framing demonstration, they will work individually or in pairs with selected AI Teaching Assistant Pro features and consider how these outputs might be used, revised, or rejected in their own teaching settings. Small-group discussion will focus on practical academic tasks such as preparing syllabi, building quizzes, creating short explanatory materials, and deciding where AI support is worth using. Participants will be asked to compare not only possible efficiencies but also risks, limitations, and quality concerns. These conversations will then feed into a moderated whole-group exchange on appropriate use, institutional fit, and academic oversight. The session will close with participants identifying one course-design task they could try with the app and one caution or implementation question they would want to address before wider use.

DELA Action Lab: Leading institutional change for the responsible use of GenAI

Deborah Arnold[1], Ronan Bree[2], Albert Sangrà[3]

[1]NTT DATA, France; deborah.arnold@nttdata.com
[2]Dundalk Institute of Technology; Ireland; ronan.bree@dkit.ie
[3]Universitat Oberta de Catalunya, Spain; asangra@uoc.edu

Correspondence: Deborah Arnold: deborah.arnold@nttdata.com

Description:

Do you feel overwhelmed by the challenges that Generative Artificial Intelligence (GenAI) poses to education? Do you have an idea of what needs to change in your institution but are not sure how to make this change happen? Do you want to discover how a tried and tested change management model can help steer your institution in the right direction? If so, this Action Lab proposed by the EDEN Digital Education Leadership Academy (DELA) is for you!

During the Action Lab, you will have the opportunity to engage in a problem-solving workshop, addressing a real-life challenge through the lens of change management, applying Appreciative Inquiry (Cooperrider & Whitney, 2005; Orr & Cleveland-Innes, 2015), which focuses on surfacing the positive and in collectively defining the desired change through Discovery, Dream, Design, and Destiny (Stavros et al., 2015).

This DELA Action Lab will equip you with insights to support you in bringing about profound institutional change in your own institution, whatever the role you hold.

Key Takeaways:

- Insights into how to apply the Appreciative Inquiry 5-D model to a concrete challenge around GenAI in higher education
- Awareness of how people in different leadership roles, both formal and informal, can bring about the desired change and ensure it sticks;
- Ideas for further reflection.

Participant Interactivity:

After an initial framing by the Action Lab moderators, participants will engage in collaborative problem-solving in small groups, focusing on a case example inspired by a real-life situation, and using the Appreciative Inquiry 5-D model as a guide. A rapporteur from each subgroup will share the solutions identified, for discussion within the wider group. To wrap up the Action Lab, the moderators will summarise the key takeaways and propose ideas for further reflection.

Indicative programme (45')

5' Welcome and icebreaker

10' Presentation of the challenge and framing of the activity

15’ Work in 3-4 subgroups (depending on the number of participants)
Each group addresses the leadership challenge using the proposed framework

10’ Reporting back from each of the subgroups, discussing solutions and proposed actions

5’ Wrap up - key takeaways and food for thought

References

Cooperrider, D., & Whitney, D. D. (2005). *Appreciative Inquiry: A Positive Revolution in Change.* Berrett-Koehler Publishers.

Orr, T., & Cleveland-Innes, M. (2015). Appreciative leadership: Supporting education innovation. *International Review of Research in Open and Distributed Learning, 16*(4), 235–241. https://doi.org/10.19173/irrodl.v16i4.2467

Stavros, J. M., Godwin, L. N., & Cooperrider, D. L. (2015). Appreciative inquiry: Organization development and the strengths revolution. In W. J. Rothwell, J. M. Stavros, & R. L. Sullivan (Eds), *Practicing organization development: Leading transformation and change* (pp. 96–116). Wiley Online Library.

EDEN NAP: Building community through research exchange

Giedrė Tamoliūnė[1], Fiona Aiken[2], Inés Gil-Jaurena[3], Vlad Mihaescu[4], Carlo De Medio[5], Mark McCormack[6]

[1] Vytautas Magnus University, Lithuania; giedre.tamoliune@vdu.lt
[2] The Open University, UK; fiona.aiken@open.ac.uk
[3] Universidad Nacional de Educación a Distancia, Spain; inesgj@edu.uned.es
[4] Polytechnic University of Timişoara, Romania; vlad.mihaescu@upt.ro
[5] University of Roma Tor Vergata, Italy; carlo.demedio.572666@uniroma2.eu
[6] Maynooth University, Ireland; mark.mccormack@mu.ie

Correspondence: Giedrė Tamoliūnė: giedre.tamoliune@vdu.lt

Names Surnames and organizations of the moderators: Fiona Aiken, The Open University; Giedrė Tamoliūnė, Vytautas Magnus University; Inés Gil-Jaurena, Universidad Nacional de Educación a Distancia; Vlad Mihaescu, Polytechnic University of Timişoara; Carlo De Medio, University of Roma Tor Vergata; Mark McCormack, Maynooth University

Description

One of the roles of the EDEN network of academics and professionals (EDEN NAP) is to build a community of practice amongst dispersed colleagues. Situated learning theory (Lave and Wenger, 1991) suggests that learning takes place through the active and engaged interactions between members of a community of practice, where members share common interests. Coughlan (2013) used situated learning to design a model for a sustainable online learning community. In this community informal learning was nurtured and a community developed through shared practices. This paper focuses on the requirements of a specific community outside of the higher education sector, in this case it was case trainers in the voluntary sector. Haresnape et al. (2022) applied this framework to a programme of tutor-led online events for geographically dispersed Open University associate lecturers in the UK. This programme demonstrated the benefits to the associate lecturers of sharing good practice with each other and it helped to nurture a sense of community among the associate lecturers. It strengthened peer support amongst colleagues in which they could share their teaching practice.

EDEN NAP Action Lab will serve as a strategic starting point for the conference, inviting participants to ***actively join the EDEN Community and explore new opportunities for collaboration*** in research, teaching, event/webinar organisation, project development and implementation or any other activities of interest. By facilitating a series of focused and brief exchanges, the session will provide a space and time for researchers, educators and professionals working in the field of digital education to share their current research trajectories, good practices and knowledge, identify shared interests, exchange contacts and discuss potential professional collaboration outside their own Academia.

This session will be facilitated by members of the EDEN NAP steering committee and will be an interactive session. Do come along and be prepared to share, in small groups, your research and any areas in which you would like to collaborate with others.

Key Takeaways:

This session will serve as an initial meeting point for researchers, educators and professionals working in the field of digital education provide a time and space for the conference participants and EDEN NAP members to:

- to share good practices and knowledge among participants who are open to networking beyond their own organisations and Academia,
- to connect to other researchers working in a similar research field,
- to expand professional networks and discuss potential collaboration ideas,
- to introduce their ongoing research ideas to other researchers,
- to explore new opportunities for collaboration e.g. in research, teaching, event/webinar organisation, project development and implementation and any other activities of interest
- to become active members of the EDEN Community by sharing ideas and proposals for upcoming EDEN NAP webinars and other virtual events.

Participant Interactivity

The session will start with a general discussion on the importance of collaboration and community for education academics. Next, the participants will be divided into groups of three with 6 people sitting at a table, each person will be given three minutes to explain their research and any areas they would like to collaborate on. After 20 minutes one group of 3 moves to the next table, the other group of three remains and a new group of three joins them, this process is repeated until all the moving groups have circulated around all the tables. This will give participants an opportunity to share their research and hopefully build some connections with others through the identification of areas of research which they have in common. Finally, at a plenary we will discuss ways in which we can build a stronger network between EDEN members.

References

Coughlan, T. and Perryman, L-A. (2013). Beyond the Ivory Tower: A Model for Nurturing Informal Learning and Development Communities through Open Educational Practices. *International Journal of Educational Technology in Higher Education, 10*(1).312-326. https://doi.org/10.7238/rusc.v10i1.1586

Haresnape, J.M., Aiken, F.J., and Wynn, Nirvana C. (2022). Sharing good practice and encouraging community cohesion online: a programme of tutor-led online events for Open University tutors. *Open Learning: The Journal of Open, Distance and e-Learning*, *37*(1) pp. 30–52. https://doi.org/10.1080/02680513.2020.1752165

Lave, J., and Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press.