Preface of the Learning Analytics Summer Institute Spain 2025 (LASI Spain 2025) *

Ainhoa Alvarez[1,†], Rebeca Cerezo[2,*,†] and Mikel Larrañaga[1†]

[1] *University of the Basque Country UPV/EHU*
[2] *University of Oviedo*

1. Introduction

The Learning Analytics Summer Institute Spain 2025 (LASI Spain 2025) took place in Vitoria-Gastiez and was organized by SNOLA (the Spanish Learning Analytics Network) and had the University of the Basque Country (UPV/EHU) as a host. LASI Spain is part of the global LASI network (https://www.solaresearch.org/events/lasi/), conceived as a platform to catalyze educators, technologists, researchers, enterprise and policymakers around shaping the next generation of learning infrastructures to truly serve the needs now facing the education sector.

The twelfth edition of the LASI Spain was held under the theme "Learning Analytics & Generative Artificial Intelligence" at the Faculty of Engineering of the University of the Basque Country UPV/EHU in Vitoria-Gasteiz. During the event, fourteen papers were selected for inclusion in the proceedings and presented at the main event. In addition, two workshops and two keynotes took place during the event. In addition, an already published relevant paper, which is related to learning analytics and artificial intelligence (AI), was presented during the event. All these contributions make this conference a reference point in Europe in this field.

2. An Overview of LASI Spain 2025 Program

The program of LASI Spain 2025 included two keynotes, several thematic sessions, workshops, and a doctoral consortium.

2.1. Keynotes

The conference program included two keynotes by Paraskevi Topali and Tobias Ley, two international renown experts in the field of learning analytics.

2.1.1. Paraskevi Topali

Paraskevi Topali is a senior researcher at the National Education Lab AI (NOLAI) and postdoctoral researcher at Radboud University, Netherlands. Her expertise lies in technology-enhanced learning (TEL), focusing on human-centered learning analytics, AI, personalized feedback, and learning design for K-12 and MOOCs. She earned her PhD (Summa Cum Laude) in Transdisciplinary Research in Education from the University of Valladolid in 2023 and has published over 20 papers in leading journals and conferences. With professional experience across Europe, she is involved in multiple funded research projects and active in TEL and AI in Education societies.

In her keynote, "*Reclaiming Teacher Autonomy in Learning Analytics & Artificial Intelligence Tools*", she explored enhancing teacher roles from passive users to co-designers of AI-driven educational tools, advocating for human-centered approaches that preserve pedagogical intent and trust as AI reshapes learning analytics.

2.1.2. Tobias Ley

Tobias Ley is a professor at the University for Continuing Education Krems (Austria) where he leads the Center for Digitalization in Lifelong Learning. He is also a professor for learning analytics and educational innovation at Tallinn University. Tobias has led numerous European research projects on intelligent learning technology for professional learning which have resulted in more than 150 publications. His research has won several awards, such as the European research excellence award on Vocational Education and Training and the national Estonian award for research in social science. His most recent project explores the complementarity of teachers and AI in teaching and learning.

His talk was titled *"Learning Analytics and AI for professional learning: from adaptive to social to situated learning"* and provided an overview of intelligent learning technology applied to professional and workplace learning over the past 20 years. Tobias reviewed various technological paradigms such as adaptive systems, learning analytics, and AI, illustrated with examples from his own research. The review emphasized the vital role of social and situated learning approaches and discusses how technology design can be shaped to support these paradigms effectively.

2.2. Contributions accepted in the Proceedings

The contributions accepted for inclusion in the proceedings are summarized below.

Full software support for game learning analytics. This paper is authored by Antonio Calvo-Morata, Julio Santilario-Berthilier, Cristina Alonso-Fernandez, Manuel Freire Morán, Ivan Martinez-Ortiz and Baltasar Fernandez-Manjon. It presents the work on SIMVA, an open-source, standard-based platform designed to simplify Game Learning Analytics (GLA) implementation in serious games. SIMVA uses the IEEE xAPI standard to collect and analyze player interaction data, supporting experimental design and validation. It enhances data reuse, compliance with GDPR, and helps researchers and developers produce scientifically validated educational games with improved learning outcomes.

Extracting Institutional Analytics features from LMS data: Towards bridging Learning and Learning Design Analytics. This paper is authored by Ariel Ortiz-Beltrán and Davinia Hernández-Leo. It presents their work which aims at enhancing institutional learning analytics by aligning LMS interaction data with key pedagogical constructs: Massive vs. Distributed Learning, Workload, and Active Learning. Analyzing anonymized logs from a Spanish university, the study develops a theoretically grounded, lightweight approach with replicable indicators from minimal LMS data, facilitating broad adoption and supporting targeted instructional improvements and course design.

Leveraging Model Context Protocol (MCP) to Enhance AI Educational Agents. This paper is authored by Ander Arce, Javier Portillo, Ainara Romero and Urtza Garay. It describes their work addressing critical learning analytics gaps in Large Language Model (LLM) classroom tutors through the Model Context Protocol (MCP). The authors redesign a tester assistant, that helps secondary-school teachers and educators refine STEAM activities, by replacing cloud-hosted models with local models, linking agents via MCP, and storing data as xAPI statements in institutional repositories. This setup preserves user history, supports detailed analysis, and ensures data sovereignty and GDPR compliance.

Inquiring into How Teacher Agency Unfolds within a Learning Analytics-Informed Co-Designed Scenario. The authors of this paper are Víctor Alonso-Prieto, Yannis Dimitriadis, Sara L. Villagrá-Sobrino, Alejandra Martínez-Monés, Paraskevi Topali and Alejandro Ortega-Arranz. This work presents a case study exploring the co-design of a Smart Learning Environment (SLE) by a higher education teacher and SLE developer/researcher. Findings suggest that involving

teachers in the design of LA-supported learning scenarios can significantly enhance teacher agency and effectively address challenges posed by increasingly automated educational systems

Practices related to learning analytics and quality assurance in Secondary Education in Spain: Initial evidence from the QUALAS project. This paper is authored by Alejandra Martínez Monés, Ada Freitas Cortina, Manuel Gil Mediavilla, Vanesa Martinez Valderrey, Sara Villagrá Sobrino, Valérie Marie Thomas, Jerich Faddar and Cecilia Saint-Pierre. It introduces the QUALAS Erasmus+ project, which is aimed at enhancing the capacity to use Learning Analytics within quality assurance processes of secondary schools. Focusing on Belgium, Ireland, Italy, and Spain, the project identifies existing quality assurance practices related to learning analytics in schools. Initial findings on these practices in the Spanish context are also discussed.

MOSAIC-F: A Framework for Enhancing Students' Oral Presentation Skills through Personalized Feedback. This paper, which is authored by Alvaro Becerra, Daniel Andres, Pablo Villegas, Roberto Daza and Ruth Cobos, presents MOSAIC-F, a novel multimodal feedback framework integrating Multimodal Learning Analytics, observations, sensors, AI, and collaborative assessments to provide personalized feedback on student learning activities. Tested in oral presentation skills, MOSAIC-F combines peer and professor assessments with multimodal data (e.g., video, gaze, physiological signals) to generate AI-synthesized, actionable feedback that students compare with human evaluations for enhanced self-awareness and improvement.

Enhancing Dashboards with Data Storytelling using Generative AI. This paper, whose authors are Aitor Renobales-Irusta, Mikel Villamañe and Ainhoa Alvarez, presents the work carried out to explore the use of Generative AI to create scalable data-driven narratives for Learning Analytics Dashboards (LADs). LADs visualize student behavior and performance data but are often difficult to interpret. Findings from three studies demonstrate how AI-enhanced storytelling can improve user understanding and dashboard effectiveness.

Predicting Deadline-Driven Learners and Dropout in MOOCs: An Analysis of Learners' Behaviors. This paper is written by Pedro Manuel Moreno-Marcos, María Cantón Rello, Carlos Alario-Hoyos, Pedro J. Muñoz-Merino, Iria Estévez-Ayres and Carlos Delgado Kloos. The paper analyzes learner behaviors in MOOCs, focusing on deadline-driven actions and help-seeking patterns. It develops predictive models to forecast task submission timing and dropout, demonstrating the relevance of these behaviors to course completion. The study highlights the potential of behavioral analytics to support timely interventions and improve learner retention in online education.

Improving generalizability of predictive models through course-related variables. This paper, authored by Pedro Manuel Moreno-Marcos, Pedro J. Muñoz-Merino and Carlos Delgado Kloos, describes their work on enhancing predictive models for student dropout and success by incorporating course context variables. Using data from 16 Small Private Online Courses, results show that adding variables like video length, number of videos, and exercise count significantly improves model accuracy across diverse educational courses and contexts.

Integration of multi-agent systems and large language models for the creation of personalized and collaborative digital educational environments. This dissertation, written and submitted to the doctoral consortium by Alberto Matilla-Molina, Juan M. Dodero and Andrés Muñoz, explores the integration of multi-agent systems and LLMs to design personalized, interactive, and collaborative digital learning environments. The main objective is to develop generative intelligent agents capable of dynamically adapting to user profiles and learning contexts within a multi-agent architecture. Preliminary studies will validate the system's technical functionality and educational potential.

Challenges for LA in Europe: Contributions from SNOLA. This paper authored by María Jesús Rodríguez-Triana, Ruth Cobos, Pedro Manuel Moreno-Marcos, Antonio Balderas and Alejandra Martínez-Monés, presents a brief overview of the activity of the Spanish Network of Learning Analytics (SNOLA) during the last decade, and the main future directions for learning analytics in Europe that were identified in LASI Europe 2024.

An AI-Based Framework for Analyzing Classroom Audio to Characterize Teaching Practice. This dissertation, written and submitted to the doctoral consortium by Federico Pardo García, Óscar Cánovas Reverte and Félix J. García Clemente, presents a modular AI framework for scalable, interpretable analysis of teaching practices using classroom audio. Addressing challenges in interpretability and modality integration, it employs labeled audio data and advanced techniques like speaker diarization and multimodal fusion. Preliminary results show accurate classification of teacher interventions and positive educator feedback, with ongoing work on generalization and explainable AI accessibility.

Feedback for instructors in synchronous video conference classes using Generative Artificial Intelligence. This dissertation, written and submitted to the doctoral consortium by Diego Cheuquepán-Maldonado, Roberto González-Ibáñez and Carol Joglar, proposes the development of a human-centered, generative AI-based tool to automate feedback for synchronous online teaching. It addresses the limitations of traditional classroom observation methods, including scalability and observer bias. Grounded in the International Comparative Analysis of Learning and Teaching framework, the research explores integrating the contexts, needs, and experiences of the instructors to enhance the usability, actionability, and acceptance of automated feedback—aiming to improve teaching effectiveness and address concerns about information overload and surveillance

Characterizing teacher agency in processes of evaluation, co-design and orchestration intelligent technologies: A multicase study. This dissertation, written and submitted to the doctoral consortium by Víctor Alonso-Prieto, Sara L. Villagrá-Sobrino, Yannis Dimitriadis and Alejandra Martínez-Monés, investigates how teacher agency is influenced by the automation of tasks in Technology-Enhanced Learning environments. It examines how learning analytics and intelligent systems shape the ability of teachers to act by involving them actively in evaluation, co-design, and orchestration of these technologies across various educational cases and settings. The study aims to deepen understanding of the complex interactions between technology, the roles of the teachers, and educational transformation

2.3.   Relevant Paper Already Published

A previously published paper was presented in LASI 2025. *"Using learning design and learning analytics to promote, detect and support Socially-Shared Regulation of Learning: A systematic literature review"*, by Villa-Torrano, C., Suraworachet, W., Gómez-Sánchez, E., Asensio-Pérez, J. I., Bote-Lorenzo, M. L., Martínez-Monés, A., Zhou, Q., Cukurova, M. & Dimitriadis, Y. In this systematic literature review, the authors synthesize existing studies that integrate LD and LA to investigate SSRL in a range of formal and informal educational contexts.

The review brings to the light how the use of Learning Design to promote SSRL is becoming more relevant, with approaches like aligning SSRL phases with learning design, generating challenges, and prompts. However, currently there is a lack of mechanisms to support SSRL during learning activities due to data collection and analysis limitations. As a result, few tools are specifically designed to support SSRL, and more studies are needed to analyze the effectiveness of the offered support.

This is the reference to the original paper:

Villa-Torrano, C., Suraworachet, W., Gómez-Sánchez, E., Asensio-Pérez, J. I., Bote-Lorenzo, M. L., Martínez-Monés, A., Zhou, Q., Cukurova, M. & Dimitriadis, Y. (2025). *Using learning design and learning analytics to promote, detect and support Socially-Shared Regulation of Learning: A systematic literature review.* Computers & Education, 105261.

2.4. Workshops

Two workshops were held at the conference.

2.4.1. Workshop1

The title of the first workshop was: "*Linking learning design with learning analytics: from activities to institutions: cases at course and institutional levels*" and was organized by Davinia Hernández Leo and Ariel Ortiz of the Pompeu Fabra University.

This workshop explored how to intentionally connect learning design with teacher and student-generated data at both the activity and institutional levels. It initially focused on identifying which are the potential relevant "learning analytics data" that is useful at activity level for the case of learning activities proposing the use of generative AI tools. Using practical cases from the TRAILS project, the workshop discussed how learning analytics could inform and enhance the design of such activities. Then, attention shifted to the institutional level. Drawing on practical analyses from the Learning Lab at UPF, it examined how learning design and learning analytics could support and guide decision-making within institutions. The workshop also encouraged discussion on the use of analytics at these two levels, fostering a rich exchange among participants.

2.4.2. Workshop2

The title of the second workshop was: "*Technology for A Happy PhD: Practices, Analytics, and Generative AI for Productivity and Well-being*" and was organised by Mohamed Saban, Luis P. Prieto, María Jesús Rodríguez-Triana, Henry Díaz-Chavarría and Yannis Dimitriadis of the University of Valladolid.

The workshop addressed critical challenges in doctoral education, including high attrition and well-being issues, emphasizing key motivational factors such as perceived progress, exhaustion, and thesis ownership that influence student persistence. Highlighting the need for socio-emotional skill development, the workshop introduced the DET platform—a novel tool combining interpretable learning analytics models with generative AI explanations to provide personalized, single-case support. Co-designed with doctoral students from various disciplines through a value-sensitive approach, DET supports evidence-based practices that enhance persistence and emotional well-being. Participants gained insight into common doctoral challenges, had hands-on experience with the freely available DET tool, and explored how integrating learning analytics and AI can effectively support socio-emotional learning in doctoral education.

3. LASI Spain 2025 committees

The following subsections list the different committees of LASI Spain 2025.

3.1. Program Chairs

- Ainhoa Alvarez (University of the Basque Country UPV/EHU)
- Rebeca Cerezo (University of Oviedo)
- Mikel Larrañaga (University of the Basque Country UPV/EHU)

3.2. Program Committee

- Antonio Balderas (University of Cádiz)
- Manuel Caeiro Rodríguez (University of Vigo)

- Oscar Canovas (University of Murcia)
- Ruth Cobos (Autonomous University of Madrid UAM)
- Juan Manuel Dodero (University of Cádiz)
- Manuel Freire (Complutense University of Madrid UCM)
- Francisco José García-Peñalvo (University of Salamanca)
- Montse Guitert (Open University of Catalonia UOC)
- Ángel Hernández-García (Technical University of Madrid UPM)
- Davinia Hernández-Leo (Pompeu Fabra University)
- Santiago Iglesias (Technical University of Madrid UPM)
- Tobias Ley (University for Continuing Education Krems, Austria)
- Alejandra Martínez-Monés (University of Valladolid)
- Juliá Minguillón (Universitat Oberta de Catalunya)
- Pedro Manuel Moreno-Marcos (Charles III University of Madrid UC3M)
- Pedro Jose Muñoz (Charles III University of Madrid UC3Mq)
- María Jesús Rodríguez-Triana (University of Valladolid)
- Salvador Ros (National Univervity of Distance Education UNED)
- Teresa Sancho (Open University of Catalonia UOC)
- Paraskevi Topali (Radboud University, Netherlands)

3.3.   Local Organizing Committee

- Aitor Renobales-Irusta (University of the Basque Country UPV/EHU)
- Mikel Villamañe (University of the Basque Country UPV/EHU)

3.4.   Doctoral Consortium Chairs

- Yannis Dimitriadis (University of Valladolid)
- Miguel Ángel Conde (University of Leon)

3.5.   Website Chair

- Andrea Vázquez-Ingelmo (University of Salamanca)

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Declaration on Generative AI

During the preparation of this work, the authors used ChatGPT and Grammarly in order to: Grammar and spelling check, paraphrase and reword. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the publication's content.