

Preface on the Learning Analytics Summer Institute Spain 2022 (LASI Spain 2022)

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The tenth edition of the Learning Analytics Summer Institute Spain 2022, LASI Spain 2022 (<https://lasi22.snola.es>), organized by the and SNOLA (Spanish Network of Learning Analytics, <https://snola.es>) [1, 2], was held in Salamanca from June 20th to June 21st, 2022. The Learning Analytics Summer Institute Spain is part of the global LASI network (<https://www.solaresearch.org/events/lasi>).

The previous editions of LASI Spain as official LASI-local event include the following:

- LASI Spain 2013 in Madrid: <http://www.emadridnet.org/index.php/es/eventos2/312-seminario-emadrid-learning-analytics-summer-institute>
- LASI Spain 2014 in Madrid: <https://canal.uned.es/serial/index/id/1303>
- LASI Spain 2015 in Bilbao: <https://blogs.deusto.es/lasi2015Bilbao>
- LASI Spain 2016 in Bilbao: <http://lasi16.snola.es>
- LASI Spain 2017 in Madrid: <http://lasi17.snola.es>
- LASI Spain 2018 in León: <http://lasi18.snola.es>
- LASI Spain 2019 in Vigo: <http://lasi19.snola.es>
- LASI Spain 2020 in Valladolid: <http://lasi20.snola.es>
- LASI Spain 2021 in Barcelona: <http://lasi21.snola.es>

The main theme of LASI Spain 2022 addressed the use of technological resources in education amidst the COVID-19 pandemic, specifically how these resources and methodologies are here to stay, and not only as a patch during emergencies. The COVID-19 pandemic had a massive impact on face-to-face teaching methodologies [3-13]. Several methodologies arose to overcome the health emergency through digital means, which also involved adapting both instructors and students to online learning approaches. Although this crisis has served as an opportunity to embrace new methods and tools, some may see these changes as a temporary stopgap as the situation normalizes to return to previous teaching methodologies subsequently. However, the sudden shift from face-to-face to online education has paved the way for some research areas to shine. In this sense, learning analytics provide the necessary methods to not only analyze and improve learning outcomes during the COVID-19 pandemic but to maintain quality teaching and learning methods even after we get to the “new normal.”

LASI Spain 2022 was held in hybrid mode (with both on-site and remote attendees). The conference program included two keynotes by international experts in the field of learning analytics, one workshops, three sessions of paper presentations, one round table, a special session with SNOLA collaborators in which the research advances of the network were summarized, and a doctoral consortium.

The keynotes of LASI Spain 2022 were the following:

- In “Leveraging learning traces to unveil learning strategies: the journey so far and roads ahead,” Jelena Jovanovic (University of Belgrade) outlined the research done so far on identifying and understanding learning strategies from traces of student learning behavior, as well as potential directions for moving this research ahead.
- In “‘Beyond’ ethics: mapping the trajectory (and futures) of ethics in learning analytics,” Paul Prinsloo (University of South Africa) mapped the trajectory of ethics in learning analytics and discussed some implications of this move ‘beyond’ ethics for policy, research and learning analytics practice.

The plenary panel discussion, under the title “Adoption of LA in businesses” and moderated by Pedro José Muñoz Merino (Universidad Carlos III de Madrid), discussed the current situation of learning analytics in businesses with guests from different companies offering different perspectives and solutions regarding the situation: Talia Kolodny and Andreina Parisi-Amon (engageli, <https://engageli.com>), Luis Rodríguez Gil (Labsland, <https://labsland.com>) and Mariana Lima Robson (Intelliboard, <https://intelliboard.net>). Each company described its solutions for businesses, as well as the implications of following a learning analytics approach in this context.

The workshop at LASI Spain 2022 was entitled “Citizen science and SDGs to support the inspiration of science in education.” The purpose of this workshop was to co-design and co-evaluate a first prototype and a set of data visualizations that are the result of a first iteration of co-design with teachers.

Citizen science (CS) promotes the active participation of citizens in scientific projects through the performance of scientific tasks or activities. CS and the Sustainable Development Goals (SDGs) are connected since there are many projects that are investigating issues related to any of the SDGs. In this context, the research is focused on how to (co)design and develop a digital tool to support the inspiration of science in education based on real open data from CS and SDGs.

Regarding the SNOLA special session, a selection of published research by members of SNOLA was presented, summarized, and discussed. On the other hand, the doctoral consortium allowed three Ph.D. students to present the advances on their thesis projects.

Finally, three sessions were dedicated to presenting the results of academic research, with a total of ten research studies selected from the open call for papers after triple-blinded peer review. The remainder of this preface presents the overview of each article.

Content-validation questionnaire of a meta-model to ease the learning of data visualization concepts (Andrea Vázquez-Ingelmo, Alicia García-Holgado, Francisco José García Peñalvo, and Ricardo Colomo Palacios) present a work-in-progress or a quality assessment and content validation of a dashboard meta-model to seek weaknesses and tackle them in subsequent iterations.

Exploring the Synergies between Gamification and Data Collection in Higher Education (Martín Liz-Domínguez, Manuel Caeiro-Rodríguez, Martín Llamas-Nistal, and Fernando Mikic-Fonte) describes a data gathering process in the context of a university course, as a work-in-progress. Among these data there is information regarding the participation of students in quizzes presented as games in the classroom. The main advantage observed was a high student participation in the quizzes. As a result, this gamification approach proved to be a more effective way to gather student data compared to other methods applied in previous academic years, which often failed due to many students ignoring optional activities.

InDash: An Interactions Dashboard to Analyze Moodle Logs (Uchendu Nwachukwu, Ángel Hernández-García, Carlos Cuenca-Enrique, and Laura Del-Río-Carazo) presents InDash, a learning analytics web service and web application dashboard to collect, analyze and visualize Moodle log data in the form of interaction categories. The document provides an overview of learning analytics applications and data collection processes in learning analytics, with emphasis on log-based learning analytics indicators.

A proposal for predicting and intervening on MOOC learners’ performance in real time (Iván Pascual Shygapova and Ruth Cobos) proposes a Machine Learning approach to predict in real-time whether a learner would drop out or pass the MOOC, and a web-based dashboard approach to support this information and provide interventions over these learners. Using it in an asynchronous MOOC for 4 months, the dropouts and passes from that period were predicted with 0.93 F1-Score.

Data Mashups Privacy Preservation for Learning Analytics (Mercedes Rodríguez-García, Antonio Balderas and Juan Manuel Dodero) presents a protocol for merging data mashups that preserves privacy by k-anonymizing the data while preserving its analytical utility.

Unplugged institutions: towards a localization of the cloud for Learning Analytics privacy enhancement (Daniel Amo-Filva, David Fonseca, Marc Alier Forment, Francisco José García Peñalvo, and María José Casany Guerrero) proposes the deconstruction of cloud computing for its localization as the basis of a new concept related to disconnecting educational institutions from the cloud that requires new technological perspectives and legal frameworks, as well as social, cultural, and political changes.

Using Process Mining to determine the relevance and impact of performing optional quizzes before evaluative assessments (Juan Antonio Martínez-Carrascal and Teresa Sancho-Vinuesa) describes the

procedure for obtaining meaningful learning processes for a Maths course based on Moodle logs. Preliminary results outline statistically significant differences between those students who take optional quizzes before submitting evaluative tests and those who decide to proceed to evaluation directly.

Human context in Sentiment Analysis symbolic technique (Daniel Amo-Filva, Mireia Usart, Carme Grimalt, and Jiahui Chen) compares results of sentiment analysis (SA) based on two different lexicons with the results of a manual labelling performed by human trainers to test the effectiveness of the SA technique.

A proposal to measure the understanding of data visualization elements in visual analytics applications (Andrea Vázquez-Ingelmo, Francisco José García Peñalvo, Roberto Theron, Vetria Byrd, and Jorge D. Camba) describes a study proposal in progress to validate the learning value of MetaViz (a platform whose goal is to provide a learning experience in which users can freely add and configure elements to understand how they influence the final display) in terms of the understandability of data visualization concepts.

Analyzing collaborative filtering for UNED freshman enrolment Recommendation system (Adrián Clavero Sanz, Victor Fresno, Fernando LaTorre Torres, and Salvador Ros) presents the study of different algorithms to develop a collaborative filter recommendation system for UNED freshmen. Two algorithms were evaluated and analyzed. The best algorithm for the recommendation system is based on cosine similarity improving in the best scenario up to 50% of the results.

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