

Reimagining Learning Analytics

Background

Learning analytics is both an academic field and a field of educational practice which has taken rapid shape over the last decade. As a research and teaching field, Learning Analytics sits at the convergence of **Learning** (e.g. educational research, learning and assessment sciences, educational technology), **Analytics** (e.g. statistics, visualization, computer/data sciences, artificial intelligence), and **Human-Centered Design** (e.g. usability, participatory design, sociotechnical systems thinking).

It was first defined in 2011 as follows:

Learning Analytics is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs.

After 15 years It is timely to revisit the definition to ensure that it still holds true as the field has grown alongside other advancements. It has become increasingly difficult for authors and reviewers of the Journal of Learning Analytics (JLA) and the International Learning Analytics and Knowledge Conference (LAK) to fully determine what is in or out of scope in journal and conference submissions.

In March 2025 the SoLAR Executive Committee formed a task force to take stock and reimagine the definition of Learning Analytics. It was critical to have an initial outcome that could inform the development of the call for papers and scope for LAK26.

Process

The Task Force invited feedback from the learning analytics community in developing and refining the LA Definition and LA Scope. Inputs included:

- LAK25 workshop
- LAK25 plenary session
- SoLAR Institutional Members roundtable
- Annual General meeting
- Group Concept mapping 82 people generated items; 25 people sorted and rated the 340 items
- Surveys 242 community responses
- Document analysis with feedback
- Document review with annotation

The Task Force initially developed six definitions of learning analytics and shared those with the members of the oversight group consisting of institutional members and current and former members of the SoLAR Executive Committee. After receiving the feedback from the oversight group, two definitions remained for further examination. The Task Force shared those definitions with the members of the SoLAR community who voted for the definition preferred between the two and, optionally, offered their comments on the definitions. After this stage, one final definition was synthesized.

The Task Force reviewed intensely all of the inputs and went back to basics that while learning analytics is a field, the definition should be about learning analytics as a concept. Learning analytics is viewed as a human-centred, multidisciplinary field that takes into account data from different sources and stakeholders.

The LA Task Force presents the following definition of learning analytics and in/out scope statement for the LA community to guide practice around LA in the coming year.

Definition

Learning analytics is the collection, analysis, interpretation and communication of data about learners and their learning that provides theoretically relevant and actionable insights to enhance learning and teaching.

Overall Scope

The following statement of scope is intended to help people wondering whether their work falls within the field of learning analytics. It is intended to be helpful for people submitting applications to either the International Learning Analytics and Knowledge (LAK) conference or the *Journal of Learning Analytics* (JLA).

Learning analytics (LA) is a human-centred, multidisciplinary field focused on the intersection of data and learning. The LA community undertakes theory-informed investigation of learning processes relevant for stakeholders (students, teachers, learning designers, advisors, and others) that informs feedback and offers actionable insights to improve learning, learners' wellbeing and quality of education. LA has a fundamentally applied nature. It approaches use of data from a holistic perspective, including data collection, analysis, communication, visualization, interpretation, and closing the loop to bring insights back to stakeholders to impact actions such as implementation of educational interventions. Responsibility, sustainability, and ethical and equitable use of data are key principles that underpin trust in LA and are incorporated in LA work.

LA offers a contextually-aware data-informed analysis of educational technology. This can be used to support evidence-based strategic and operational decisions that help learners, teachers, or other practitioners involved in education. Besides quantitative analysis based on mathematical approaches, machine learning and other AI-based methods, this work often involves descriptive methods for analysis, and frequently uses data visualization, dashboards, or data storytelling to communicate insights. Qualitative approaches, mixed methods, action research, and approaches from the learning sciences are also utilized when oriented toward insights enhancing learning. The LA field frequently pushes methodological boundaries, including through the use of advanced artificial intelligence (AI) and other statistical modeling or data science methods. In fact, by 2025, AI was one of the fastest growing areas of interest for the global LA community. Subfields within LA dynamically emerge and evolve over time. These include areas such as multimodal LA, support for self-regulated learning, human-centered LA, and analysis of teaching and learning in AI-supported learning environments. LA empowers people with insights derived from data, often using co-design processes that connect learners, researchers, and practitioners to enable responsive action that catalyzes educational imagination from a human-centered perspective.

The following are examples of topics considered in and out of scope for learning analytics. These examples may be modified in the future by LAK program chairs and JLA editors. The topics of interest identified here combine suggestions from community input with areas identified as in scope in LAK calls for papers.

In Scope

Tracing Learning & Teaching:

- Finding evidence of learning: Studies that identify and explain useful data for analyzing, understanding and enhancing learning and teaching. The collected data can include but is not limited to sampling frames; software interfaces for tracing learning and affective events; sensors for recording physiological indicators of learning and other processes; properties of archival data; utterances exchanged with chatbots; artificially intelligent agents for soliciting learners' on-the-fly accounts of learning processes and affect/ emotions; teacher observation methods; and experience sampling methods.
- **Assessing student learning:** Studies that assess learning progress through the computational analysis of learner actions or artifacts, as well as social interactions with peers and teachers that might support the attainment of intended learning outcomes.
- Analytical and methodological approaches: Studies that introduce analytical techniques, methods, and tools for modeling student learning with the goal of empowering learners or other educational stakeholders and enhancing learning. Methods could include artificial intelligence, machine learning, natural language processing, social network analysis, text mining, and knowledge tracing among others, if targeted toward LA-oriented questions. These approaches may also include the use of multimodal learning analytics as well as flexible approaches to learning and teaching that support learning processes, learner achievements, and learner well-being.
- **Technological infrastructures for data storage and sharing:** Proposals of technical and methodological procedures to store, share and preserve learning and teaching traces, taking appropriate ethical considerations into account and involving feedback loops to stakeholders.

Understanding Learning & Teaching:

- **Data-informed learning theories:** Proposals of new learning/teaching theories or revisions to / reinterpretations of / support for existing theories based on or related to large-scale data analysis.
- **Insights into specific learning processes:** Studies to understand particular aspects of a learning/teaching process through a learning-theory-informed use of data science methods and techniques, including negative results.
- Learning and teaching modeling: Creating mathematical, statistical or computational models of a learning/teaching process, including its actors and context, when targeted toward learning analytics-oriented questions. Note that this is in contrast to work focused on comparing algorithms or prediction models, which may be better targeted toward educational data mining (EDM).
- **Understanding learning and teaching with artificial intelligence (AI):** Studies that analyze environments that aim to enrich learning by using artificial intelligence that might change the role of teachers in all stages of the learning process, starting with learning design via facilitating learners to supporting learner-centred decision making, and the learning paths of learners.
- **Systematic reviews:** Studies that provide a systematic and methodological synthesis of the available evidence in an area of learning analytics.

Impacting Learning & Teaching:

- **Human-centered design processes:** Research that documents practices of giving an active voice to learners, teachers, and other educational stakeholders in the design process of learning analytics initiatives and enabling technologies.
- **Providing decision support and feedback:** Studies that evaluate the use and impact of feedback or decision-support systems based on learning analytics (dashboards, early-alert systems, automated messages, etc.). This includes data visualization and data storytelling with learning-related data.
- **Data-informed decision-making:** Studies that examine how teachers, students or other educational stakeholders come to, work with and make changes using learning analytics information. This includes use of artificial intelligence as a tool for automating analysis of learning-related data to provide insight, predictions, and recommendations that enhance decision making for stakeholders at any level. It also includes action research and qualitative investigation of how stakeholders understand and utilize data in educational contexts.
- **Personalized and adaptive learning:** Studies that evaluate the effectiveness and impact of adaptive technologies based on learning analytics.
- **Practical evaluations of learning analytics efforts:** Empirical evidence about the effectiveness of learning analytics implementations or educational initiatives guided by learning analytics.

Implementing Change in Learning & Teaching:

- Ethical issues around learning analytics: Analysis of issues and approaches to the lawful and ethical capture, protection, and use of educational data traces, including data privacy; tackling unintended bias and value judgements in the selection of data and algorithms; perspectives and methods that empower stakeholders.
- Equity, fairness and transparency in learning analytics: Consideration of how certain practices of data collection, analysis and subsequent action impact particular populations and affect human well-being, specifically groups that have been previously disadvantaged. Discussions of how learning analytics may impact (positively or negatively) social change and transformative social justice.
- Learning analytics adoption: Discussions and evaluations of strategies to promote and embed learning analytics initiatives in educational institutions and learning organizations. Studies that examine processes of organizational change and practices of professional development that support impactful learning analytics use.
- Learning analytics strategies for scalability: Discussions and evaluations of strategies for scaling the capture and analysis of information in useful and ethical ways at the program, institution or national level; critical reflections on organizational structures that promote analytics innovation and impact in an institution; use of artificial intelligence to increase the scale of educational interventions using learning analytics approaches.
- **Strategic planning of learning & teaching:** Consideration and application of trustworthy learning analytics in all phases of strategic planning, including needs analysis for change, decision-making, implementation and monitoring, as well as evaluation of strategic decisions, taking into account the complexity and context of the strategic decision-making domain.

Out of Scope

- Work focused solely on aspects of methodology and data manipulation that does not discuss, work towards or include closing the loop to stakeholders, for example, by empowering learners, teachers, or other educational stakeholders.
- Work without any data or evidence that relates to learners, educators, or learning processes.
- Work introducing analytical techniques, methods, and tools without connecting to learners or learning processes.
- Work focused on comparisons of different approaches to predictive modelling or algorithm accuracy is likely to be a better fit for educational data mining (EDM).
- Work that evaluates the effectiveness and impact of adaptive/personalised learning technologies that are not explicitly grounded in learning analytics.
- Classic ed-tech research is better suited for the International Society of the Learning Sciences (ISLS) or similar venues in the education sciences. This includes quantitative, qualitative and mixed-methods studies that use data related to education and learning but do not make strong connections to learning analytics in their research questions or findings.

- Work that focuses on comparisons between departments, institutions, regions or countries, for example management dashboards or work using PISA data, is usually classed as academic analytics.
- Studies involving artificial intelligence (AI) may be in or out of scope, depending on the context and intention of the work. For example, work on how AI is deployed in primary classrooms might be a better fit for AI-Ed, but using analytics in evaluations of the effectiveness of AI-supported learning environments is in scope for learning analytics.
- Work without a sound theoretical foundation in learning theory or that does not use sound methodologies when collecting and analysing data.
- Studies that do not situate themselves in relation to previous work in LA. This might involve building on, extending, supporting, or revising that work, or identifying a gap that should be filled. A paper that does not mention 'learning analytics' in its text or references is highly likely to be out of scope.

Next Steps

For the remainder of 2025 the community will work with the draft definition that has been developed to determine if it has helped authors and reviewers for submitting and reviewing for LAK26 and JLA editions. The Task Force's goal is to have a further refined and finalized definition by May 2026 in time for the LAK27 call for papers.

- 1. LAK26 PC chairs to use the community feedback and initial report from the LA Task Force to develop the LAK26 call for papers, and advice on topics and scope.
- 2. JLA editors to use the community feedback and initial report from the LA Task Force to develop calls for submissions and provide advice on topics and scope.
- 3. Survey LAK26 reviewers during fall 2025 to get feedback about the revised definition and scope statement's helpfulness and what additional revisions are needed.
- 4. Write a position paper recapping the work of the Task Force to be published in December 2025 on the SoLAR Position Papers website: <u>https://www.solaresearch.org/publications/</u><u>position-papers/</u>
- 5. Data from the community Group Concept Mapping exercise will be made available in an open source dataset as a companion to the position paper.
- 6. Conduct a final data gathering exercise about the definition/scope in the early part of 2026.
- 7. Present the outcomes of this project during LAK26 via a plenary panel discussion for further feedback.
- 8. Final report in May 2026 in time to inform the development of the call for papers for LAK27.