

Editorial: LAK '16 Special Issue

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ABSTRACT: This article introduces the special issue from SoLAR's 2016 Learning Analytics and Knowledge conference. The field of learning analytics (LA) draws heavily on theory and practice from a range of diverse academic disciplines. In so doing, LA research embodies a rich integration of methodologies and practices, assumptions and theory to bring new insights into the learning process. Reflecting this rich diversity, the theme of LAK 2016 highlights the multidisciplinary nature of the field and embraces the convergence of these disciplines to provide theoretical and practical insights to challenge current thinking in the field. This overview introduces five articles, each of which expands on an invited talk or paper from the conference, with the added goal of offering a small taste of the rich experience that comes from active participation in the conference.

Keywords: Special issue, learning analytics, research, practice, policy, Society for Learning Analytics Research, SoLAR, LAK '16

The field of learning analytics (LA) is rapidly growing in all facets of its research, application into practice, and theoretical contributions. The theme for the 6th International Learning Analytics and Knowledge Conference (LAK '16) aimed to explore the multidisciplinary connections that effectively illustrate how learning analytics can provide critical insight into both individual and collective learning processes.

From past conferences, we have seen a diverse representation of academic disciplines and hence associated methodologies and practices, assumptions, and theories. The theme of 2016 focused on the multidisciplinary nature of the field and embraced the convergence of these disciplines to provide theoretical and practical insights that will further advance the field — through research, adoption, and implementation — and ultimately provide a foundation for informing government and institutional policy.

The 2016 conference attracted research and practice papers addressing the “convergence of communities” in LAK and bringing a novel perspective and approach for reflecting on the field. We received an overwhelming response to this call that far exceeded our expectations and “maxed out” all aspects of the conference. We observed tremendous growth in conference attendance as well as the submission of papers and workshops. The research track received 245 submissions and the practitioner track received 37. Out of the 116 full papers received, 36 were selected, resulting in a 31% acceptance rate. The proceedings include also 27 short papers, 4 panels, and 10 posters. We also provided a pre-conference program consisting of a doctoral consortium in which 14 students were invited as fellows.

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Additionally, we accepted 15 workshops and tutorials. This made LAK '16 one of the largest educational technology conferences, bringing together many and varied professional research organizations.

This special issue includes an invited set of extended papers of the various topics discussed at the LAK '16 conference held in Edinburgh, United Kingdom. The first paper, by Mireille Hildebrandt (2017) is a summary of her keynote given at the LAK '16 conference, “Learning as a Machine: Crossovers between Humans and Machines.” Hildebrandt’s article can be “read” in three ways. First, it can refer to the learning process itself, as a kind of machinery, as a mechanistic or deterministic process. Second, it can refer to the learning process of machines, notably to machine learning as one of the most promising techniques of artificial intelligence. Third, “learning as a machine” can refer to the fact that human beings increasingly live in a world saturated with data-driven applications that are more or less capable of machine learning. Hildebrandt investigates what this could mean in terms of human liberty and human dignity — two key terms in the privacy and legal protection debate — to explain how they relate to the application of learning analytics to aid human learning processes. The paper includes a discussion of legal protection by design in the context of learning analytics, notably providing students with profile transparency while protecting their fundamental right to data protection.

Next, the second paper, “Learning Analytics for Natural User Interfaces: A Framework, Case Studies, and a Maturity Analysis” by Martinez-Maldonado, Buckingham Shum, Schneider, Charleer, Klerkx, and Duval (2017), examines current research and development in the field, exploring learning analytics associated with the use of interactive surfaces and tangible devices. The proposed framework analyses experiences according to five dimensions: 1) the orchestration of activities involved; 2) the phases of pedagogical practices supported; 3) the target actors; 4) the iteration of the LA process; and 5) the levels of impact of LA deployment. The paper reports both current developments and future challenges.

The third paper, “Towards Reflective Writing Analytics: Rationale, Methodology, and Preliminary Results,” by Buckingham Shum, Sándor, Goldsmith, Wang, Bass, and McWilliams (2017), demonstrates how natural language processing can be used to provide real-time, formative feedback on writing. This paper reports progress in designing a writing analytics application, detailing the methodology by which informally expressed rubrics are modelled as formal rhetorical patterns, a capability delivered by a novel web application.

The fourth paper, “Role Modelling in MOOC Discussion Forums” by Hecking, Chounta, and Hoppe (2017), analyses networks of forum users based on information-giving and information-seeking interactions. Specific connection patterns that appear in the information exchange networks of forum users are employed to characterize user roles in a social context. Additionally, content-based roles are derived by identifying thematic areas in which an actor seeks information (problem areas) and the areas of interest in which an actor provides information to others (areas of expertise). The results show that social and content-based roles are not strongly interdependent.

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The fifth paper, “Learner Dashboards a Double-Edged Sword? Students’ Sense-Making of a Collaborative Critical Reading and Learning Analytics Environment for Fostering 21st-Century Literacies” by Tan, Koh, Jonathan, and Yang (2017), discusses the affordances of learning analytics tools with the increasing demand for enhancing 21st-century pedagogical and learning strategies as well as outcomes. It shows that use cases and empirical understandings of student experiences with learning analytics tools for 21st-century literacies are still very rare. The paper aims to shed insight into the pedagogical complexities of designing learning analytics for 21st-century pedagogy, describe an early prototype, and discuss how learners need to be taken into account as a critical stakeholder group.

The five papers comprising this special section represent only a small portion of the diversity of research now prevalent in learning analytics. This rapidly maturing field is now a leading area in education. This is obvious in the volume of submissions and attendance at the LAK '16 conference. However, as in any field, complacency and acceptance of basic assumptions could quickly undermine the progress made to date. It is critical that all learning analytics researchers and stakeholders continue to question practices, seek opportunities for replication studies, push our methodological boundaries, and continue to innovate and embrace the multidisciplinary nature of our work.

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