

The Promise and Peril of Learning Analytics in P-12 Education: An Uneasy Partnership?

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Abstract

Applying learning analytic approaches in the P-12 context could radically change the nature of elementary and secondary education. Yet, there are great hurdles to overcome in implementing such approaches at this level, including: the lack of technical infrastructure and human capital to collect and analyze data; the ability to make sense of the analytics collected for teaching and learning improvement; the ethical challenges related to data collection and retention for minors; the unanticipated or unintended uses of this data in the future, etc. The purpose of this SIE is threefold: 1) to further refine the conversation by situating issues, ethics and methods for learning analytics in P-12 education; 2) to envision the potential and pitfalls of analytics in P-12 learning contexts; and 3) to identify and develop a set of concrete takeaways related to our theme such as ideas for future research proposals, journal articles, and/or applications.

Keywords: learning analytics; P-12 education; educational policy; education informatics

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1 Purpose and Intended Audience

With the rise of learning management systems, e-learning platforms, and MOOCs in higher education and professional learning venues, educational data mining and learning analytics have been in information professionals' view for a number of years (Papamitsiou & Economides, 2014). More recently, the U. S. Department of Education released an issue brief (Bienkowski, Feng, & Means, 2012) describing how learning analytics might be used for educational improvement in P-12 settings. To date, most analysis of large sets of data in the P-12 domain have focused on student generated data and teacher-student interactions within learning management systems (Perisco & Pozzi, 2015); however, many state-level departments of education are now moving to evaluation systems requiring teachers to collect evidence of student learning related to the teachers' own student growth goals (Danielson Group, 2013).

Learning Analytics is rooted in a constructivist philosophy of teaching: by leveraging real-time feedback on learning, teachers can influence the efficacy of their practice, and learners can gain greater insights to their learning processes. Applying learning analytic approaches in the P-12 context could radically change the nature of elementary and secondary education, as it would track the impact of the teaching and learning process on students and teachers consistently and longitudinally. Yet, there are far greater hurdles to overcome in implementing such approaches at this level, including: the lack of technical infrastructure and human capital to collect and analyze data; the ability to make sense of the analytics collected for teaching and learning improvement; the ethical challenges related to data collection and retention for minors; the unanticipated or unintended uses of this data in the future, to name just a few. Educators, parents, administrators, policy makers, and information professionals are in need of guidance and support to begin addressing the issues.

The iConference is an especially relevant venue to begin this conversation. The iConference theme of "Partnership with Society" connects to the complexity of this problem: how this issue is not just about our personal pedagogies, but how we envision youth education broadly: how "data driven" do we want our children's formative experiences to be? As a field, we continue to explore the information concepts underlying big data, such as data management, use, visualization, and information ethics. Taking a multi-stakeholder perspective, informed by theory and practice, our session would address both the promise and peril of learning analytics in P-12 education. The proposed session builds upon previous Sessions for Interaction and Engagement (SIE) focused on the intersection of Information Science and the Learning Sciences (2014 - Berlin) and Learning Analytics (2015 - Long Beach). The purpose of this SIE is threefold: 1) to further refine the conversation by situating issues, ethics and methods for learning

analytics in a specific and underrepresented area, namely P-12 education; 2) to envision the potential and pitfalls of analytics in P-12 learning contexts; and 3) to identify and develop a set of concrete takeaways related to our theme such as ideas for future research proposals, journal articles, and/or applications.

2 Proposed activities:

Using a lightning talk format, the session will be conducted in a 90-minute session as follows:

- Brief overview of Learning Analytics in the P-12 setting (15 minutes)
- Introduction to new systems of educator evaluation in P-12 settings and the collection of evidence within those evaluation systems (5 minutes)
- Four lightning talks followed by Q & A (10 minutes each; 40 minutes total)
 - Data management—what types of systems would be needed (or currently available) to collect and organize these learning analytics?
 - Data potential—how might researchers and policy makers analyze these analytics to advance the effectiveness of teachers and librarians (individually or collectively)?
 - Ethics—What are potential and actual ethical issues related to collection and analysis of learning analytics in P-12 education?
 - Logistics—Do school librarians, teachers, and other P-12 specialists have the skills (or time) necessary to identify appropriate evidence and collect it? What are other potential barriers to collecting learning analytics in P-12 settings?
- Facilitated interaction (30 minutes). We will conclude with four small group discussions on the promise and peril of learning analytics in P-12 education, aligned with the four themes in the lightning talks above. Specifically, the organizers will lead the small groups to come up with tangible outputs of research problems, methodologies, and publications/grant proposal ideas that can be collectively pursued.

3 Relevance to the Conference/Significance to the Field:

While much research has focused on higher education, there is great potential for learning analytics in P-12 settings and many untapped areas for application. Thus, a session focused on a specific Learning Analytics application will position iConference participants to take the lead in this research. The organizers of this SIE are leaders in the area of school-centered informatics, and edit or serve on the editorial board of *School Library Research* and *Library Quarterly* journals. The output of this session will influence a special issue or collaboratively written report in one of these journals. The conversation on learning analytics has centered on post-secondary applications because this is where we teach, but also where it is easy to gather and analyze student data. Thus, our session is significant in part because we are not “searching beneath the lamppost.”

4 Indicate the length of your event.

This SIE session will span 90 minutes.

5 References:

- Bienkowski, M., Feng, M., & Means, B. (2012). *Enhancing teaching and learning through educational data mining and learning analytics: An issue brief*. Washington, DC: US Department of Education, Office of Technology.
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