

TWG 6: Putting learning back into learning analytics: optimizing learning through analysing the data

Learning analytics have been defined as the use of static and dynamic information about learners and learning environments, assessing, eliciting and analysing it, for real-time modelling, prediction and optimization of learning processes, learning environments, as well as educational decision-making. To target the outcomes of data systems is a new challenge for computer scientists and engineers as well as educators. For instance, learning analytics of student data sets can be used for formative and summative assessments, but issues related to privacy and usability are growing concerns. For example, with large data sets available to teachers and learners, who owns these data, which data are available and which are private? Furthermore, who analyses these data and who is the data analysed for? What can teachers do with all these data and what feedback and monitoring of learning might students expect from learning analytics? How can fair uses of techno-led/enabled assessment be ensured and what are the risks associated with data use for promoting students' achievements? The group will identify how learning analytics may influence policy and teaching practices.

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Issues and Challenges

There are numerous missed opportunities for effective use of learning analytics systems to drive improvements in student learning and success at scale, with corresponding impacts on the whole society, due to several problems, tensions and barriers.

1. There is a widespread lack of knowledge and understanding about learning analytics and the need to select and use learning analytics systems for supporting learning, teaching and assessment, tracking progress and informing decision-making.
2. Guiding principles and policies need to be updated to help institutions make use of learning analytics.
3. Standards are needed for ethical design and use of learning analytics systems by educational data services providers and users; ensuring quality (e.g. auditing, transparency, reporting), sustainability and scalability.
4. Flexible, user-centered designed tools are needed for different learning levels, ages and stakeholder groups in their unique educational contexts.
5. There is a need to apply and advance educationally relevant research-based knowledge to:
 - a. engage key stakeholders of learning (e.g. students, parents, teachers, school leaders)
 - b. create and ethically use rich data models and methodologies to advance learning
 - c. integrate instructional theory, design and delivery with analytics data and insights
 - d. safeguard security, privacy and control of data
 - e. understand the impacts of combining data types from all sectors (health, socio-emotional, SES, etc.) on interactions with the individual

- f. enhance data interoperability with standardized measures

‘Emerging’ New Alignments

- Literacy, fluency and control over data are linked
- Global differences in learning analytics impact uses, meanings, and methods
- Advancing educational research is needed for analytics theory and methodology
- Bridging data science and learning science requires improved multidisciplinary and frameworks

Strategies and Actions

We recommend the following actions for policy makers (PM), researchers (R) and practitioners (PR) each strategy linked to the corresponding challenges identified above:

In order for evidence-based practice to be led by analytics:

- Develop learning analytics policy that focuses on leadership, professional learning, enabling mechanisms, and data governance. (PM, R)
- Ensure open access to resources and best practices. (All)

To promote the adoption of learning analytics

- Develop standards, guiding principles and policies as well as best practices for the use of learning analytics (PM)
- Enable organizational change to support stakeholders to utilize learning analytics for learning. (PR)

To inform and guide data services providers and users:

- Promote trustworthy, ethical quality assurance through mechanisms such as standards, accreditation processes, audits and recommendations. (PM)
- Promote sustainability and scalability, for example via embedded and just-in-time services. (R)

To impact learning via analytics tools:

- Ensure educationally relevant data literacy levels (knowledge, understanding and capacity for decision-making) of all stakeholders is raised. (All)
- Provide specific analytics tools for different stakeholders (age groups, learning levels), using evidence informed context and impact insights. (All)

To leverage the relationship between instructional design and learning analytics, and to extend to course and curriculum analytics, e.g. via AI:

- Use learning analytics to inform the advancement of instructional design for quality learning, teaching and assessment. (R, PR)
- Enable multidisciplinary and participatory research for quality assurance as well as for keeping pace with the technology lifecycle of enabled learning environments. (All)

To understand the impacts of combining data types from all sectors (health, socio-emotional, SES, etc.) on interactions with individuals; improving data models and leveraging AI and related technologies.

- Provide data privacy and security for interoperability (e.g., using health data, socio-economic data, behavioral, social-emotional, academic data, etc. to advance learning goals) (R, PR)
- Guarantee the control and ownership of data is clear, transparent and in the hands of the person who is the subject of the data (e.g. EU-GDPR, ISO standard on privacy) (All)