

# Ten Facts About Learning Analytics

## **01** Learning analytics are aimed at improving teaching and learning

Learning analytics involve the measurement, collection, analysis, and reporting of data about learners and the contexts in which learning takes place, with the aim of improving the teaching and learning environment. Data may be drawn from a learning management system (LMS), as well as from other institutional sources, such as the student information system, library records, attendance records, or other administrative systems. Data may also be mined from sources external to the institution, including social media sites, surveys, and online repositories. Other definitions can be seen at the following links:

- 1st International Conference on Learning Analytics and Knowledge (LAK 2011) - <https://tekri.athabasca.ca/analytics/>
- Jisc (UK academic non-profit organization formerly Joint Information Systems Committee) - <https://www.jisc.ac.uk/reports/learning-analytics-in-higher-education>
- EDUCAUSE - <https://library.educause.edu/topics/teaching-and-learning/learning-analytics>
- Wikipedia - [https://en.wikipedia.org/wiki/Learning\\_analytics](https://en.wikipedia.org/wiki/Learning_analytics)
- National Forum for Teaching and Learning's Online Resource for Learning Analytics (Ireland) - <https://www.teachingandlearning.ie/learning-analytics-educational-data-mining-learning-impact/what-is-learning-analytics/>

## **02** Students can benefit from learning analytics

There are a variety of ways that students can benefit from learning analytics, although the research evidence is equivocal on their reliability and the conditions under which they are most effective. For example, through learning analytics, students can be presented with a dashboard that indicates their progress in a program or course, they can compare their engagement with others in the same course, they can receive alerts from their instructor about how well they are progressing, or they can receive suggestions for follow-up remedial actions if they are facing difficulties. The following are links to illustrative cases on how learning analytics have been used to help students.

- Hibernia College (Ireland) - <https://www.teachingandlearning.ie/wp-content/uploads/2017/08/Case-Study-1-Formatted.pdf>
- University of Limerick (Ireland) - <https://www.teachingandlearning.ie/wp-content/uploads/2017/08/Case-Study-4-Formatted.pdf>
- Purdue University (US) - <https://analytics.jiscinvolve.org/wp/files/2016/04/CASE-STUDY-A-Purdue-University.pdf>
- University of Maryland, Baltimore County (US) - <https://analytics.jiscinvolve.org/wp/files/2016/04/CASE-STUDY-B-University-of-Maryland-Baltimore-County.pdf>
- University of New England (Australia) - <https://analytics.jiscinvolve.org/wp/files/2016/04/CASE-STUDY-G-University-of-New-England.pdf>

## 03 Faculty can benefit from learning analytics

Learning analytics assist faculty in various ways, including preparing for lectures by indicating topics that students are having difficulty with, fostering a better understanding of student needs, alerting faculty when they need to intervene in discussion forums, and identifying effective course resources. The following are links to illustrative cases on how learning analytics can help faculty.

- University College Dublin (Ireland) - <https://www.teachingandlearning.ie/wp-content/uploads/2017/08/Case-Study-3-Formatted.pdf>
- Nottingham Trent University (UK) - <https://analytics.jiscinvolve.org/wp/files/2016/04/CASE-STUDY-I-Nottingham-Trent-University.pdf>
- University of Wollongong (Australia) - <https://analytics.jiscinvolve.org/wp/files/2016/04/CASE-STUDY-J-University-of-Wollongong.pdf>
- Open Universities Australia - <https://analytics.jiscinvolve.org/wp/files/2016/04/CASE-STUDY-K-Open-Universities-Australia.pdf>
- [Using Learning Analytics to Predict \(And Improve\) Student Success: A Faculty Perspective](#). (Dietz-Uhler, B., & Hurn, J. E., 2013).

## 05 Institutions can benefit from learning analytics

At the institutional, departmental, and program levels, learning analytics can provide data about students at risk of dropping out, indicate factors leading to student success, chart student progress through programs, and identify areas where tutorial or support programs may need to be established. Here are links to illustrative cases where institutions have benefitted by implementing learning analytics.

- Edith Cowan University (Australia) - <https://analytics.jiscinvolve.org/wp/files/2016/04/CASE-STUDY-F-Edith-Cowan-University.pdf>
- Marist College (New York) - <https://analytics.jiscinvolve.org/wp/files/2016/04/CASE-STUDY-E-Marist-College.pdf>
- New York Institute of Technology - <https://analytics.jiscinvolve.org/wp/files/2016/04/CASE-STUDY-C-New-York-Institute-of-Technology.pdf>
- Open University (UK) - <https://analytics.jiscinvolve.org/wp/files/2016/04/CASE-STUDY-H-Open-University-UK.pdf>
- University of British Columbia - <https://isit.arts.ubc.ca/learning-analytics/>

## 04 Programs can be improved through learning analytics

Learning analytics can provide academic administrators, faculty, and instructional designers with data, which otherwise would be impractical to obtain. These data may include curricular areas in need of improvement, which components of courses are most often used or under-utilized, year-over-year comparisons of student performance, and by providing data to inform academic programming decisions. Here are links to some cases on how learning analytics have been used for this purpose.

- University of British Columbia - [http://viva.sfu.ca/images/VIVA/CaseStudies/CS2-Learning\\_Analytics\\_UBC.pdf](http://viva.sfu.ca/images/VIVA/CaseStudies/CS2-Learning_Analytics_UBC.pdf)
- Hibernia College (Ireland) - <https://www.teachingandlearning.ie/wp-content/uploads/2017/08/Case-Study-2-Formatted.pdf>
- National University of Ireland Galway - <https://www.teachingandlearning.ie/wp-content/uploads/2017/08/Case-Study-12-Formatted.pdf>
- Dublin City University (Ireland) - <https://www.teachingandlearning.ie/wp-content/uploads/2017/08/Case-Study-14-Formatted.pdf>
- [Curricular Design Analysis: A Data-Driven Perspective](#). (Mendez, G., Ochoa, X., Chiluita, K., & de Wever, B., 2014).

## **06 Ethical use of student data is a serious concern**

The potential nature, quantity, variety, and veracity of data mined through learning analytics raise serious ethical and privacy concerns. Added to this is the question of the moral and potential legal obligations of an institution to act upon newly found information that may improve a student's chances of success. Therefore, institutions are advised to develop policies on data collection and usage, codes of ethics, and procedures for the oversight of data. Below are links to resources that can assist institutions in these endeavours.

- Jisc Code of Practice for Learning Analytics - <https://www.jisc.ac.uk/guides/code-of-practice-for-learning-analytics>
- [Privacy and Learning Analytics-It's A DELICATE Issue.](#) (Drachsler, H., & Greller, W., 2016).
- Open University (UK) Ethical Use of Student Data for Learning Analytics Policy - <http://www.open.ac.uk/students/charter/essential-documents/ethical-use-student-data-learning-analytics-policy>
- [Ethics and Learning Analytics: Charting The \(Un\) Charted.](#) (Prinsloo, P., & Slade, S., 2017).
- [An Elephant in The Learning Analytics Room: The Obligation to Act.](#) (Prinsloo, P., & Slade, S., 2017).

## **07 Most major learning management systems have learning analytics**

Most learning management systems (LMS) used in higher education today have learning analytics capabilities. In the case of commercial LMS, analytics may be included or an optional component to purchase, whereas in open source LMS analytics, modules may have to be installed by the system administrator. Below are links to the analytics features of five of the major LMS used in higher education.

- Blackboard - <http://www.blackboard.com/education-analytics/index.html>
- Brightspace (Desire to Learn) - <https://www.d2l.com/topics/learning-analytics/>
- Canvas - <https://community.canvaslms.com/docs/DOC-10742-67952724559>
- Moodle - <https://docs.moodle.org/35/en/Analytics#Overview>
- Sakai - <https://confluence.sakaiproject.org/pages/viewpage.action?pageId=75671025>

## 08 Learning analytics are not without risks

Although learning analytics have promising potential for promoting student success, there are risks associated with their use. The risks include: data can be misinterpreted, the predictive models are not fail-proof and may misclassify students, contradictory findings can emerge, excessive demands on faculty time, and they can lead to data overload with the sheer amount of information produced. Potential threats to confidentiality are possible too if data are warehoused in external repositories, such as those of LMS or other service providers. Accordingly, caution must be exercised when storing and employing learning analytics data. The following are links to resources that discuss some of the potential issues.

- EDUCAUSE Review: Improving Retention by Identifying and Supporting “At-Risk” Students - <https://er.educause.edu/articles/2012/7/improving-retention-by-identifying-and-supporting-atrisk-students>
- [Creepy Analytics and Learner Data Rights](#). (Beattie, S., Woodley, C., & Souter, K., 2014).
- [Big Data Analysis in Higher Education: Promises and Pitfalls](#). (Dede, C. J., Mitros, P., & Ho, A. D., 2016).
- [Learning Analytics Considered Harmful](#). (Dringus, L. P., 2012).
- Learning Analytics: Benefits and Challenges for Higher Education - <https://councilcommunity.com/2015/05/23/learning-analytics-benefits-and-challenges-for-higher-education/>

## 09 Implementing and scaling up learning analytics can be challenging

Leaders must have a clear vision of why learning analytics are going to be used in their institution and what can realistically be accomplished. Institutions need to ensure that they have the staff with the required interdisciplinary skills, financial resources, infrastructure, and organizational capacity and will to implement learning analytics. Plans must be aligned with institutional goals and priorities, governance structures need to be in place, and criteria need to be developed to measure success and ensure ethical practices are upheld. A senior level champion is frequently seen as key to successful implementation and scaling of an initiative. Moreover, faculty need to be involved in the planning process and understand how learning analytics can benefit them and their students. The following are links to resources that can aid in the planning and implementation process.

- EDUCAUSE Learning Analytics: Avoiding Failure - <https://er.educause.edu/articles/2017/7/learning-analytics-avoiding-failure>
- ECAR Report on Learning Analytics in Higher Education - <https://library.educause.edu/resources/2016/2/learning-analytics-in-higher-education>
- [Addressing the Challenges of Institutional Adoption](#). (Colvin, C., Dawson, S., Wade, A., & Gašević, D., 2017).
- Student Retention and Learning Analytics: A Snapshot of Australian Practices and A Framework for Advancement [Report Pp. 30 - 33] - <http://he-analytics.com/>
- [Learning Analytics in Higher Education—Challenges and Policies: A Review of Eight Learning Analytics Policies](#). (Tsai, Y. S., & Gasevic, D., 2017).

## **10** Learning analytics are an evolving field

Learning analytics are an evolving field with many innovative developments taking place. There is a consensus that the most influential development will be greater use of artificial intelligence to automate data capture and recommend follow-up actions. Other advancements include the use of social network data to enhance teaching and learning; use of emotional and video data; the development of open source predictive algorithms; creation of cross-institutional data repositories; and enhanced student and faculty dashboards. At the same time, learning analytics deal with sensitive student personal information and could infringe on faculty autonomy, both of which may hamper future developments if related issues are not adequately addressed. Below are links to reports on future directions of learning analytics.

- ECAR Report Learning Analytics in Higher Education [pp. 35 – 36] - <https://library.educause.edu/resources/2016/2/learning-analytics-in-higher-education>
- NMC Horizon Report: 2017 Higher Education Edition [pp. 14 -15] - <https://www.nmc.org/publication/nmc-horizon-report-2017-higher-education-edition/>
- [Learning Analytics: Visions of the Future](#). (Ferguson, R., Brasher, A., Clow, D., Griffiths, D., & Drachsler, H., 2016).
- [Measuring and Understanding Learner Emotions: Evidence and Prospects](#). (Rienties, B. & Rivers, B.A., 2014).
- [Features Students Really Expect from Learning Analytics](#). (Schumacher, C., & Ifenthaler, D., 2018).